INSANITY DURING THE PUERPERIUM.

THESIS FOR THE DEGREE OF M.D.

by

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INSANITY DURING THE PUERPERIUM. A RECORD OF 42 CASES.

The mental disturbances associated with child-bearing have probably received more attention from writers than any other so-called form of insanity. Treated of alike by obstetricians and alienists, the literature on the subject is copious, and though as a distinct variety of insanity it is no longer recognised, it is in virtue of its great frequency and its relation to the toxic insanities a great field of interest and research.

Sir J. Batty Tuke[1] was the first to bring out prominently the fact that certain characteristics appertain to the mental symptoms appearing during the three periods into which childbearing is divided, and he distinguished three groups namely Insanity of Pregnancy, Puerperal Insanity and Insanity of Lactation. This paper is an attempt to set forth an account of the mental symptoms, their causation and treatment, of 42 cases of insanity occurring during the puerperium which have come under my own immediate observation during the past eight years.

The/

(1) Sir J. Batty Tuke. Edinburgh Medical Journal, May 1865.

"The puerperium begins with the third stage of labour and ends with those changes that take place in the uterus and genital canal after labour, a process of involution that normally lasts about six weeks."[1] Although the great majority of cases of puerperal insanity occur within the first fortnight after labour, the term is applied to all cases occurring within six weeks after labour.

Campbell Clark[2] did not call a case one of lactational insanity unless it occurred three months after the confinement. In looking over cases of lactational insanity one is struck by the fact that the symptoms which have necessitated removal to an asylum have frequently been preceded by milder symptoms usually of a melancholic type, which the patient's friends can trace back to the early days of puerperium.

On the other hand many cases admitted more than six weeks after labour, which are put down to the confinement, may simply have been suffering from physical weakness and lethargy, and the further exhaustion of lactation may be the real exciting cause/

(1) Professor Sir A. R. Simpson. Lectures on Midwifery.

(2) Campbell Clark. Lectures on Insanity.

cause, though the friends are only too ready to trace the condition back to a definite cause, the confinement. In many cases too a slight lethargy and mild depression may have existed during pregnancy, while in others actual insanity of pregnancy, instead of passing off before the confinement, becomes intensified in the puerperium, and the proper classification of such cases is difficult. A number of cases of insanity, perhaps more than is generally supposed, appear at times altogether apart from the puerperium, which on careful enquiry might be traced to pelvic troubles acquired during the puerperium.

Hobbs(1) mentions a series of such cases, appearing many months after the puerperium and diagnosed as primarily due to pelvic troubles. Forty-five per cent of them recovered under surgical treatment. In point of causation these might reasonably be called cases of puerperal insanity, the actual exciting cause being some mental strain or other circumstance which intensified the feeling of malaise that had existed since the puerperium.

Such/

(1) Hobbs. American Journal of Insanity July 1899. p.93.

Such a case came under my notice in hospital. A patient after a protracted labour was seized on the 8th day with severe rigors. Her temperature was 103°, her pulse 140. She had vague pelvic pains for some weeks afterwards, but left at the sixth week in fair health, languid, but not depressed. Her mental condition did not call for any notice till five months afterwards when she became so depressed as to necessitate removal to an Asylum where local treatment brought about a cure.

The cases of insanity that manifest themselves during the puerperium constitute a large proportion of female admissions. Professor Simpson (1) says insanity develops in 1 out of every 400 confinements. Dr. Clouston (2) thinks this a low estimate. Statistics on this point must be difficult to verify without the co-operation of the physician, the alienist and others. Many cases fortunately do not require asylum treatment, and a great many cases of transient mental alienation never get beyond the knowledge of the patients' relatives and the midwife. The 42 cases here reported constituted.

(1) Professor Sir A.R.Simpson. Lectures on Midwifery.
(2) Dr. Clouston. Mental Diseases. p.545.

constituted 4.5 per cent of the total female admissions during eight years. Dr. Clouston's[1] percentage was 5. Sir J.Batty Tuke[2] who puts the total due to childbearing at 7.1 in a total of 2181 admissions, gives the puerperal cases proper a percentage of 3.3. The proportion of cases occurring during the puerperium, is great compared with those of pregnancy and lactation.

Sir J. Batty Tuke[3] out of a total of 155 cases due to childbearing had 47.09 percent of puerperal, 34.8 lactational, and 18.06 pregnancy cases.

Ripping[4] out of 3246 female admissions had 6.8 per cent due to childbearing, fifty per cent of the number being cases of puerperal insanity proper. During the past eight years I have had 42 cases of puerperal insanity, 9 of insanity of pregnancy and 26 of lactational insanity.

SYMPTOMS:-

The term puerperal mania, formerly used to designate the most commonly occurring type of insanity during the puerperium and frequently met with in medical certificates as a general term to denote/

(1) Dr. Clouston. Loc.cit.
(2) Sir J. Batty Tuke. Loc.cit.
(3) Sir J. Batty Tike. Loc.cit.
(4) Ripping. Die Geistesstörungen des Schwangeren Wöchnerinnen u. Saugenden. 1877.

denote any form of mental alienation at that period is no longer tenable in view of wider classifications and recent researches into causation. It has been usual to divide the mental symptoms into those of mania, melancholia and delirium, with the fatuity into which a certain number of these cases sink. Mania as applicable to the condition has chief reference to excited conditions, melancholia to quiet depressed cases. It must be recognised that many of the most excited cases have, underlying the excitement, emotional conditions the reverse of exaltation, where for example hallucinations of a terrifying nature produce the most intense agitation. Amongst the quiet cases there are many where the emotional tone is quite awanting, cases which though not excited cannot be classed as melancholics. It is now generally admitted that every variety of mental disease may occur in connection with the puerperium, but some are of very much greater frequency than others. The term mania though it does not give an idea of the many other symptoms, such as confusion, hallucinations, etc., which occur in puerperal cases is probably as useful to designate some cases as many other terms which take note of other individual symptoms such as acute hallucinatory/

hallucinatory insanity, but the term cannot be used to describe every case of excitement. As a knowledge of the pathology of insanity has advanced, classifications have multiplied upon various bases. The briefest of all would divide the varieties into toxic and idiopathic. The most constant symptom seems to me to be mental confusion and I consider that some of the excited conditions might be as well described by the term Mania with confusion as in any other way.

The following case seems to me a typical case of puerperal excitement.

M.R. age 26, married, was admitted suffering from acute excitement of four days' duration. She had been married fifteen months. Her paternal grandmother and a female cousin were insane. The patient was a strong woman and had always been active and very cheerful but easily worried. She had been very constipated all through her pregnancy and at the end of the first month had a sharp attack of peritonitis. She was confined 17 days before admission. The presentation was transverse and the labour was very protracted. The haemorrhage though not excessive was considerable. Her father was drinking heavily in her home during the first few/

few days after the birth and she got very little sleep. On the 8th day she got up to nurse her mother. This she did for seven days when she collapsed physically and became very restless and talkative. In 24 hours she was mildly delirious, said that her father and mother had been poisoned, and that some persons were trying to poison her. In two days she was violent and unmanageable.

On admission she was very pale, with a hectic flush, bright eye, and wildly excited look. Her tongue was dry and furred, her lips shewing patches of herpes, and her "acetone" breath indicated that she had been refusing food. Her pulse was 98, and of low tension. There was no uterine tenderness. The lochia were scanty but sweet, and her temperature was 98.6°. Mentally she was greatly confused, paying no attention to anything said or done to her, and constantly struggling against all restraint. She talked incessantly, singing snatches of popular songs, stopping for a moment to laugh extravagantly, then stooping down to whisper a few words to the floor and then resuming her shouting. At times she talked of her father and mother dying, when she would moan for a little, then laugh loudly and fling herself upon the floor. She was constantly tearing at her clothes without/

without any regard for decency, spitting on the floor and striking out at the nurses. Her arms were never at rest. She would rub her hands through her hair or wave her arms about in an aimless fashion. She seemed to have hallucinations of sight occasionally and very often of hearing. She had 2 drachms of paraldehyde, slept for 20 minutes, and with a similar dose for four and a half hours. She had to be fed by the tube. Two days after admission her bowels had been well evacuated. By this time the acute hallucinatory state had subsided. She was now very noisy, mischievous, pulling the nurse's hair, jumping out of bed to seize and destroy a flower-pot or tear up a plant. After being removed to a single room under the care of two nurses she became quieter. She would now answer a question in monosyllable but correctly, immediately thereafter resuming her incoherent rambling talk. She slept for five to six hours every night with 2 drachms of paraldehyde. Six days after admission she had an acute exacerbation with terrifying hallucinations, dashing herself about on the bed and requiring $\frac{1}{100}$ gr. of Hyoscine. This acute attack only lasted a few hours. A fortnight after admission she developed a mastitis of the right breast which was opened the following day. From this/

this time she seemed to be a little quieter, very talkative and restless but remaining in bed and not shouting as formerly. She had one other attack of agitation and fear lasting about 2 hours. She was fed by the tube for a month. The breast healed in a fortnight and by this time she was taking large quantities of food and talking more rationally. She was very destructive and excited at times. She had a considerable amount of confusion still, mistaking the identities of nurses, calling them by the names of relatives. About three months after admission she rushed to the ward fire and tried to set herself on fire. She developed erotic tendencies, talking indecently, winking and making indecent remarks to the doctor. After this she had a period in which she was very unpleasant, angry, frowning and giving impertinent replies to everyone. Then she became cheery and pleasant --- in manner and conversation and recovered six months after admission.

Here we have a case which though acutely maniacal had also symptoms of the delirious form of mental confusion described by Kraepelin (1) as an exhaustion psychosis. The most constant symptom was the excitement, but there was more in the case than an exalted emotional disturbance which is the essential feature/

(1) Kraepelin, Clinical psychiatry. P.136.

feature of pure mania. The incoherence of speech, impulsiveness, obscene talk etc. of the later stages were all like acute mania but the hallucinations and mental confusion of the early stages constituted a condition of slight delirium. According to Bianchi(1) hallucinations are never present in pure typical mania but constitute a form of sensory insanity which is toxic in origin. At first the patient had symptoms of great mental confusion. Her attention was quite impaired and the clouded consciousness was evident from the fact that a terrifying hallucination so little affected her subsequent reactions that in a moment she was laughing and singing. Her conversation was completely disjointed, the changes being at times apparently initiated entirely by outward stimuli and by her illusions rather than by a deranged process of ideation such as in the flight of ideas in mania. The fact that at times she had lucid intervals and would answer questions correctly does not remove the case from the confusional states as according to Paton (2) intervals of lucidity and quiet may come and go. According to him the distractibility in these confusional conditions is not so great as in ordinary maniacal excitement. This was very evident in/

(1) Bianchi. Textbook of psychiatry. p.680
(2) Paton. Psychiatry p.269.

in a woman who, having undergone a number of exhausting conditions, got into a state of frenzied excitement on the 7th day. For some weeks her condition was one of intense excitement with great frequency of terrifying hallucinations. When given a shake and spoken quickly to, she would answer a simple question correctly. Her hallucinations corresponded to those met with in delirium tremens where the patient can often give a correct answer in the midst of the hallucinatory delirium. All the time however she was wildly excited and occasionally hilarious and destructive. The difficulty with regard to the case of M.R. quoted above is that it might be classed at times as the delirious form of confusion, and at others as the confused form of mania both recognised by De Fursac[1] but presenting, I consider, scarcely any difference except the presence or absence of an exhausting cause. In the question of causation this is of interest, as it seems to me there are periods in the course of the excited cases when the mental confusion is greater, probably due to a more active exacerbation of the toxaemia. At times the toxaemia is lessened and the mental confusion passes off, while the accompanying excited or depressed state continues.

Acute/

De. Fursac. Manual of psychiatry.

Acute delirium, the most profound form of mental confusion, with its severe physical symptoms may be the condition in some cases from the outset, while again an acute mania with only slight confusion may pass on to a condition of acute delirium.

Mental confusion according to Bianchi[1] is not but a secondary symptom, and most frequently arises a disease in itself, in connection with sensory disorders from the break in the logical associations of thought and action caused by the hallucinations. I have had cases which from their causation and physical symptoms I would put down as exhaustion psychoses, and where though mental confusion was present I could not be certain of the presence of hallucinations. In the quieter forms, mental confusion is not difficult to distinguish. It is in the very excited cases that there is difficulty in classifying cases as confused mania or primary mental confusion.

With regard to the severity of the delirium the nature of the physical symptoms seems to me to have much to do with the classification of the cases, and the classification of a case as an acute delirium or a terminal acute deliricus mania is largely a question of the prognosis as regards the physical state.

The/

(1) Bianchi Loc.cit. p.741.

The case reported above is from the mental aspect a delirium of collapse as much as if the woman had been more physically prostrated than she was. According to Seglas,(1) the physical symptoms of any case of exhaustion insanity are general prostration, exhaustion and ill-nourishment. This woman had not got to that stage and was kept from it by immediate treatment. The delirium which comes on in a prostrated ill-nourished person after a fever or, as in two of my cases, at the fourth week of an exhausting puerperium does not differ much from the above case except in the more asthenic character of the excitement, and the greater confusion due to diminished resistance to the toxaemia.

The following is a case that illustrates the gravest form of acute delirium.

W.B. age 20, single, was admitted to hospital in a state of collapse. She had been in poor health, starved and neglected during her pregnancy, and at the commencement of labour there was no one in attendance. It was the second day before she got assistance, and a midwife found the os widely dilated, but the labour did not progress. The labour had lasted/

(1) Seglas, quoted by De.Fursac. loc.cit p.130.

lasted 48 hours when she was taken to hospital, found to have a contracted pelvis and delivered under chloroform. The following day her temperature rose to 101° and she was in a state of great exhaustion. On the second day she was restless and anxious with feelings of vague depression. Her temperature fell to 98.2°. Her pulse which was 130 on the evening of her confinement fell to 108 but became more feeble. On the 3rd day she became quite unmanageable. She was in a state of intense excitement, her eyes wide open, the eyeballs rolling from side to side. She kept clutching at some imaginary objects with her hands. She talked incessantly about a man at her bedside who was covered with beetles and was trying to take her away. There was another man creeping stealthily along the ceiling to help the man at her bedside. She continued in this state for 8 hours, her pulse becoming almost imperceptible and her temperature falling to 97.7°. With 40 minims of Tinct. Opii she fell asleep, wakened calm in 3 hours, and died 13 hours after the onset of the hallucinations. A post-mortem could not be obtained, but the extraordinary exhaustion indicated by the history and manifest in her appearance quite accounted for the mental symptoms and the fatal termination.

The/

The delirium of collapse which in the two cases reported had different features on account of the intensity of the physical symptoms was, I considered, the form of insanity present in a number of my 42 cases. All the cases that occurred within the first week after confinement might with few exceptions be divided into those due to collapse and those due to sepsis. The mental symptoms did not shew any well marked differences in any of these cases and all of them were cases of excitement with confusion and hallucinations, the relative preponderance of the symptoms being largely determined by the amount of predisposition and the physical condition of the patient.

The following case did not differ much from the previous one except in the underlying cause and the physical signs of sepsis.

Mrs .S. or G. aged 37 . primipara, was delivered after a slightly protracted labour at which the perinaeum was torn. A brother and two sisters had been insane. The patient progressed favourably till the 4th day when the temperature rose to 103° and the pulse was 120. A foetid discharge appeared which broke down the adhesions of the stitched perinaeum. A complete examination revealed no cause in the uterus/

uterus and under vaginal douching the discharge ceased. The temperature was swinging from 99° to 103° till the seventh day, when the patient suddenly became excited and the subject of terrifying hallucinations. Under the influence of these she dashed out of bed and tried to escape by the ward window. The temperature continued high, the pulse becoming weak and more rapid. She suffered from continuous hallucinatory confusion and great excitement for 2 days and died nine days after the confinement. At the post-mortem half a pint of pus was found in the peritoneal cavity. There was little difference in the mental symptoms of these two acute cases except that in the first case, which was from the causation more an exhaustion psychosis than the second, there was really less continuous confusion, the septic case being completely disoriented during the 2 days of the acute symptoms.

The delirium of collapse in puerperal cases is according to Macpherson (1) analagous in its origin and course to post-operative insanity and usually occurs about the fourth day. The actual labour however, it seems to me, need not be the sole exciting cause for in the case of M.R. the mental symptoms did not appear/

(1) Macpherson. Mental affections. p.240.

Case of Delirium of Collapse . State of great confusion in the interval of attacks of great excitement with hallucinations of sight and hearing of a terrifying nature .

appear till the 14th day and were apparently due as much to the mental strain and loss of sleep that occurred in the second week.

The mode and time of onset varied very considerably in all the cases of acute excitement, and although most of the cases accompanied by offensive lochia occurred early, yet a case which died of septicaemia did not shew any symptoms till after the additional strain of a long journey on the 10th day had weakened the patient. Those cases which occurred within the first week were almost invariably either septic or due to collapse, though cases due to these causes occurred later.

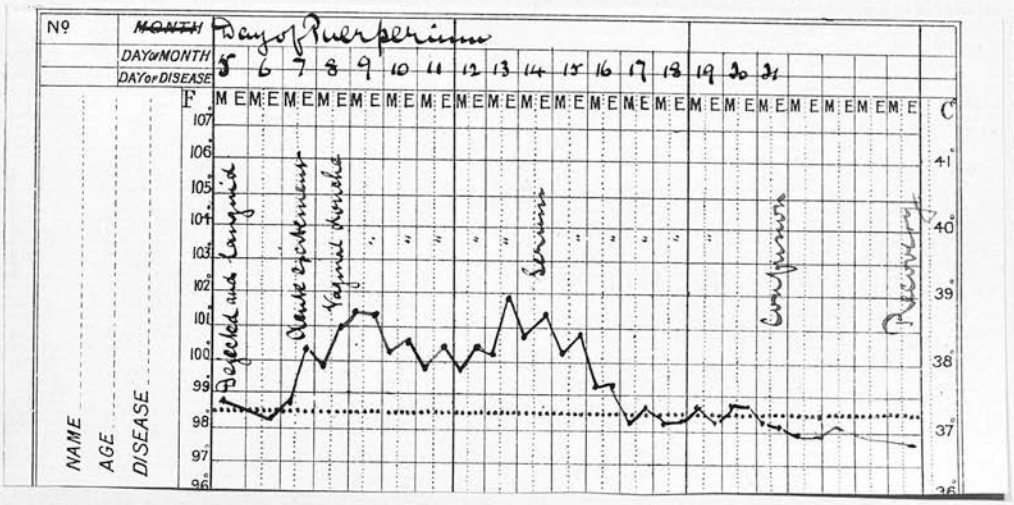
Taking the nine cases of acute excitement which seemed to be primarily due to sepsis or afterwards proved to be streptococcal, the majority of them developed mental symptoms from the 4th to 7th day. The disease in all cases developed very rapidly, the delirium being preceded by a few days of apathy and slight irritability in two cases. In every case there was marked excitement on admission. There was greater or less confusion and the patients always had an amount of disorientation, mistaking the identities of nurses, etc. The restlessness varied from constant tossing in bed and waving about of the/

of the arms, to determined attempts to get out of bed with great resistiveness to restraint. The ideas were quite incoherent, the speech usually muttering. Occasionally the patients would burst into wild shouting and some of them would repeat over and over again the same words or make continuous and monotonous gestures with the arms. Hallucinations of hearing were present in every case and at times hallucinations of sight, though more often the latter were of the nature of constant fleeting illusions. Impulsive attempts to injure nurses were present in three cases. Very often the patient's determined attenpts to escape from bed were the result of hallucinations. The physical symptoms varied in each case but certain of them were characteristic. In every case there was an elevation of temperature. It varied on admission from 100° to 102°. The pulse was in all cases somewhat weak and always over 110. Offensive lochia were present in most of the cases. In one case that died in a few days with an abscess in the region of the pouch of Douglas the lochia were arrested when the case was admitted. In the prolonged septicaemic cases the lochia were at first slight and inoffensive, but in most of these cases the infection was found to be streptococcal.

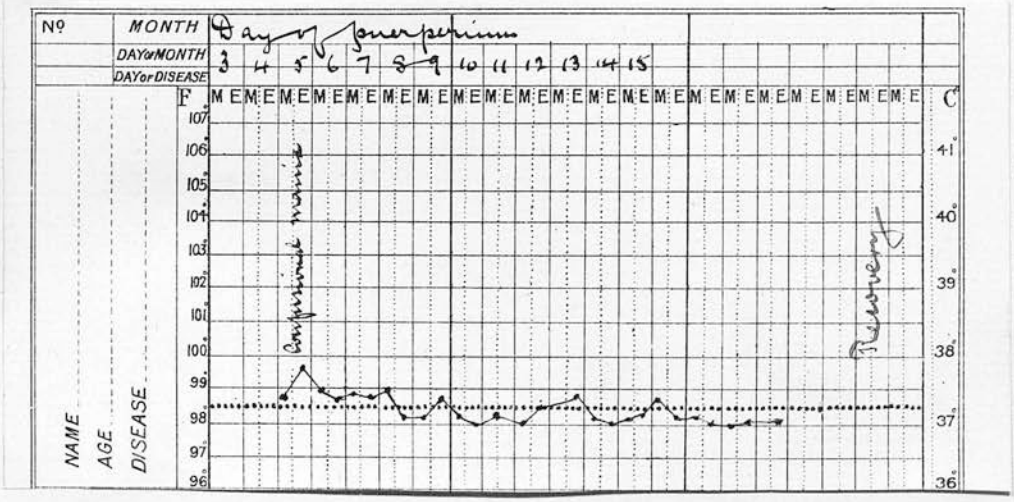
The/

Temperature Charts .

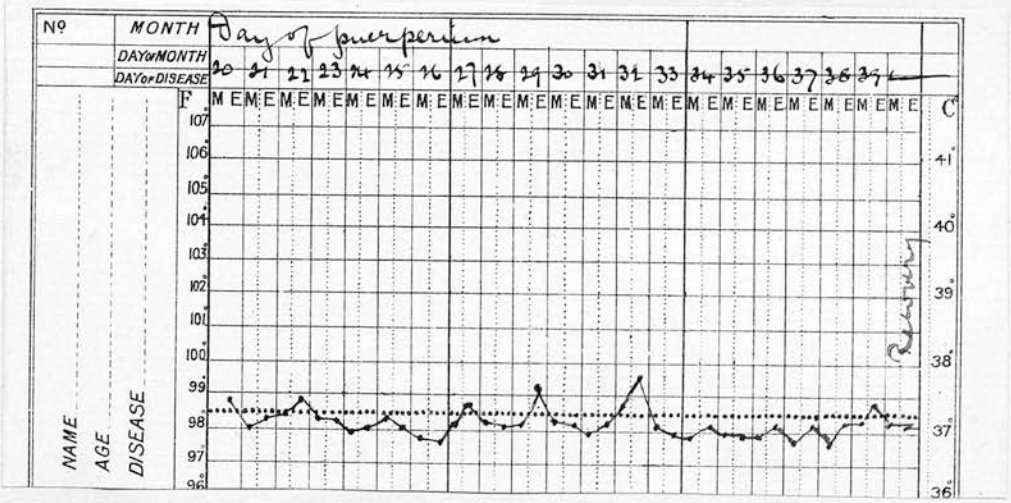
1. Case of Acute confusional mania with symptoms of mild sepsis.



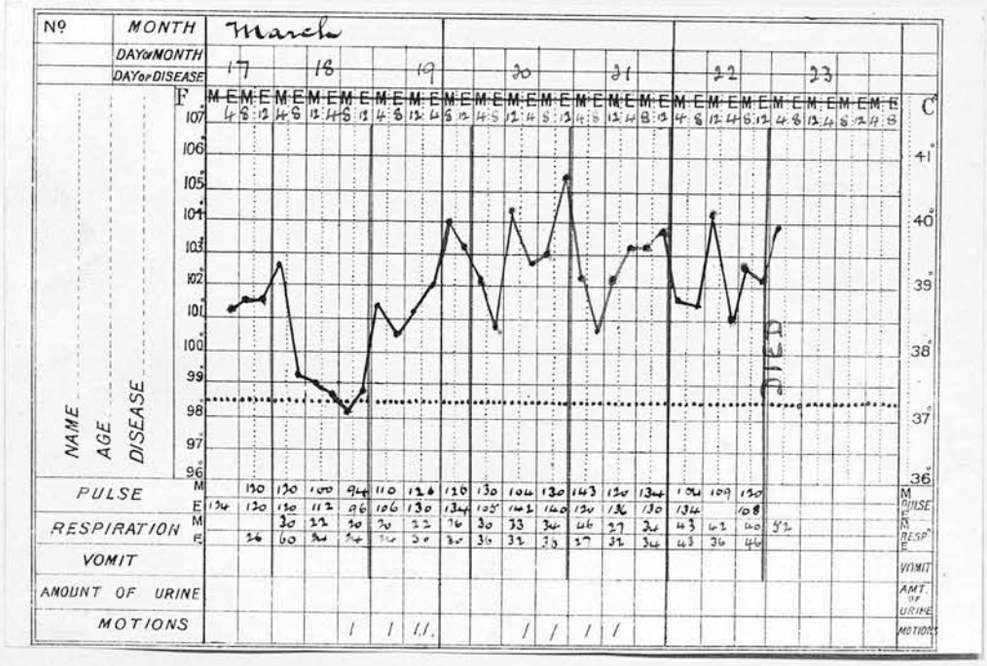
2. Case of Acute confusional mania without sepsis.



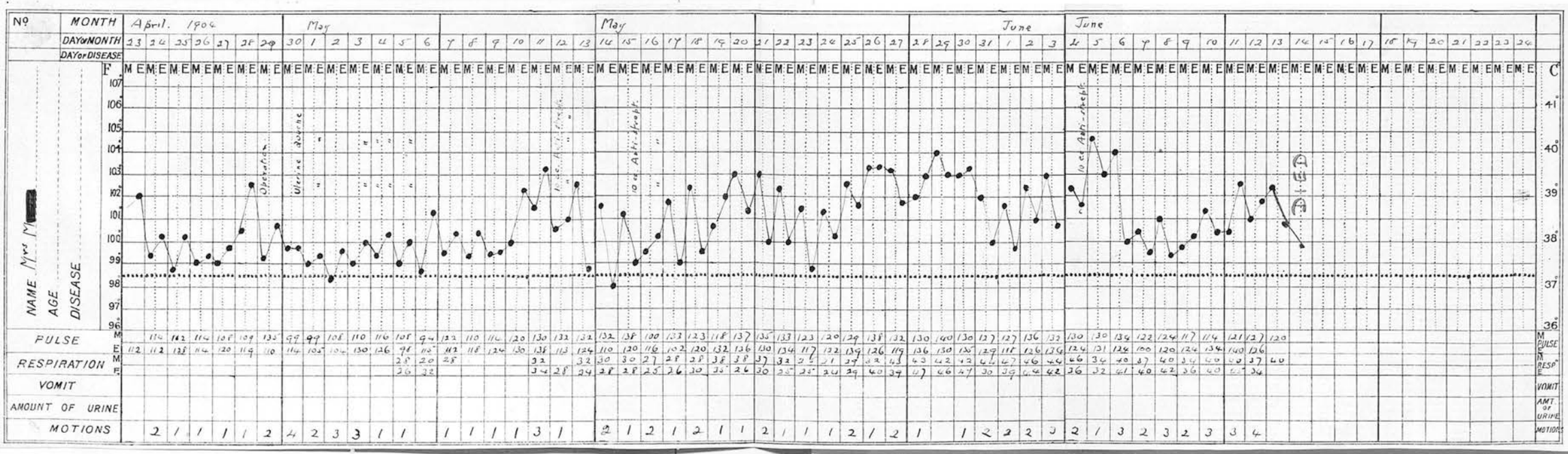
3. Case of Confusion with melancholia and exhaustion.



Case of Acute Delirium (" septic delirious mania")
with rapidly fatal termination , due to septic
absorption from peritoneal collection of pus.



Case of Acute Delirium with prolonged course,
(" Acute delirious mania " ; " Manie Grave " .)
with fatal termination ,and due to streptococcal
infection .



The following is a case of acute excitement not so grave as the acute delirium previously reported, and due to sepsis. In it we have more of the maniacal character.

C.G. or S. age 29, married, was delivered of her first child by forceps 16 days before admission. The perinaeum was torn. A maternal aunt had been insane at a confinement. Four days after the confinement the patient's temperature rose to 101°. Under vaginal doucheing the temperature fell to normal in two days, and at that time she became strange in manner and very excitable. For several days she was mentally confused, did not speak and apparently had no idea of what was said to her. At the 8th day the lochia became foetid. By the 10th day she was very restless, talking continuously in monosyllables with no sense or meaning. Admitted on the 11th day, she was wildly excited, and resistive, biting the nurses and assaulting them. She had the appearance of great mental confusion and paid no attention to any questions. At first she did not speak but the following day she was shouting out, singing at times, at others swearing and blaspheming. Her temperature was 101.6°, her pulse weak and rapid. On the following day she was more excited having to be held in bed. Her speech/

speech was rambling and unintelligible. An examination of her blood shewed leucocytes 17,000, and haemoglobin 58 per cent. Her temperature gradually fell to normal on the 4th day but rose a little in the evenings for a week thereafter, while the lochia were offensive for that time. She had at times vivid hallucinations of hearing. Her mental condition remained almost unchanged for six weeks during which her talk was incoherent and her excitement marked. She was constantly restless, laughing, singing and shouting. Her treatment consisted of vaginal douching from the first, an occasional hypnotic of paraldehyde, and large quantities of fluid food which she took from the first without much resistance. After two months she became quiet and remained in a condition of mental confusion with an almost continuously exalted emotional tone for a month. Then she became very noisy, destructive and aggressive. By the end of the sixth month she began to refuse her food and was very impulsive, tearing her clothes, taking them off, and resisting their being put on. Gradually she became quiet and recovered in 10 months. If we compare this case with the case of M.R. first quoted there seems to be very little difference in the mental symptoms/

mental symptoms. In the early stages of the latter case there was a more continuous muttering delirium and less evidence of a sthenic aggressive mania but the presence of hallucinations, the incoherence of speech, the impairment of attention, the presence of mental confusion were prominent features in both. The latter case was in a state of delirium, sub-acute it may be, but still of sufficient severity to call the case delirious mania. The first case would be classed by some as acute mania. Let us take the differential diagnosis of Savage between acute mania and acute delirious mania in two points only. "In acute mania the appetite is capricious, in acute deliricus mania the patient refuses food." In these two cases the septic delirious case took her food in the early stage, refusing it only when she got into the resistive confusional state later on. Of course refusal of food is more constant in the grave cases of continuous delirium, but it seems to me the septic delirious case was as much an acute delirious mania from the mental side as if it had ended fatally. "In acute mania the hallucinations are more persistent if present while in acute deliricus mania they are very variable like those of fever." In the first case the acute excitement was at times made/

made more intense by vivid but brief hallucinations of a terrifying nature, while in the septic case the delirium was occasionally intensified by distressing hallucinations of hearing. Bianchi(1) states that in acute mania there are no hallucinations. There seems good reason for classifying the two cases, apart from their different causation and slight difference in symptoms, in a group which would take note of this confusion in each, both being in reality states of mental confusion, the first one with great excitement, the second being really an acute delirious mania though not in the sense usually meaning a grave typhoid condition which might follow either of these two cases. The most acutely maniacal cases of all were two where the mental symptoms followed upon eclampsic seizures at different intervals. Here again the toxic element was manifest in the vivid hallucinations, the profound confusion and the physical condition.

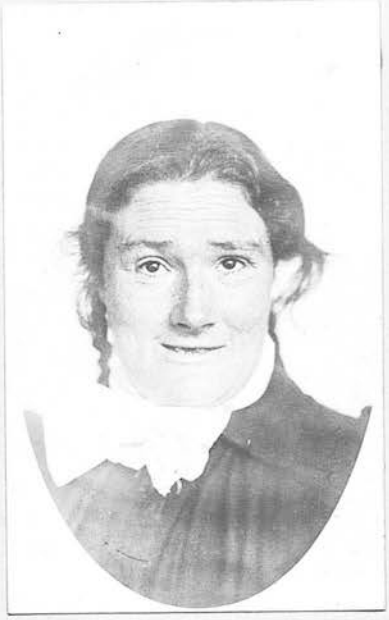
M.N. or C., age 27, had been married 13 months when her first child was born. She was a very nervous woman but according to her husband's statement had/

(1) Bianchi. Loc.cit.

had been during pregnancy more equable mentally than usual. Almost immediately after her confinement she had six eclampsic seizures. A fortnight afterwards she began to talk nonsense and on admission she was much confused without any great motor excitement. She laughed when asked a question, swore furiously and obstinately refused food. There was some albumen in her urine. In 24 hours she was violently excited, shouting out wildly, threatening to cut her throat, talking about her child and expressing a desire to murder it, swearing about it all the while. She fought violently against restraint, using most obscene language to the nurses. On the 3rd day she became more confused and experienced the most vivid hallucinations of sight and hearing, continuing for two days to see rats and other animals, hearing the voices of her relatives, and all the while in a state of wild excitement. By the sixth day she was quiet and was recovered by the 10th day. Here was a case which although it only lasted 10 days could be well described as acute delirious mania, a term as already indicated reserved by most writers for prolonged and fatal cases.

I consider that there was an element of confusion in all my cases whatever type the prominent mental/

Caes of sub-acute Mania with destructive and homicidal impulses . This puerperal attack was only one in a Folie Circulaire , but at first there was a confusional element in additionto the Mania.



mental symptoms took. Macpherson[1] says that apart from the delirium of collapse and the septic delirium met with in the cases occurring during the the first week, there is an element of confusion in the manias and melancholias which occur later. In one case where from the absence of exhausting causes, the profound neurotic tendency, the constant hilarity and the apparent absence of any hallucinations, the case most nearly approached the condition of acute mania, the confusional element was manifest in the impulsive attempts at self-mutilation. Even in two cases where the patients had been insane on many occasions apart from the puerperium, and the puerperal attacks were almost periods in a folie circulaire, there was a confusional character in the puerperal attacks that was absent from the others.

As regards the prolonged delirious mania, I shall describe two cases in connection with the blood examination.

Mental confusion of a stuporose form is a very frequent sequel to the acute cases, lasting in some instances for a month or two after the excitement has passed away till recovery ensues. Mental confusion is often the prominent symptom in some of the

(1) Macpherson. loc.cit. p.240.

Case of Primary Confusion with mild melancholia appearing late in the puerperium , with anaemia and exhaustion .

the depressed cases, and remains after the melancholia just as after the excitement. In other cases it forms an intermediate stage as the stuporose phase of katatonia. Mental confusion by itself may be the characteristic feature throughout the entire course of the disease as in the following case.

R.G. aged 26, married. There was no history of hereditary insanity. She had been in good health and this was her third pregnancy. The last one came rather quickly after the second. At five and a half months she had a very severe attack of influenza. on her household duties again, she became weak and Starting at the seventh month she miscarried, losing a considerable amount of blood. Getting up in ten days she began from that time to be moody and quiet, sleeping badly and taking little food. A fortnight after the confinement she was quite stupid, sitting about all day, forgetting to prepare her husband's dinner and neglecting her children. She seemed unable to "pull herself together." Then she began to lie in bed, reading her bible, quoting texts in a confused way and talking about her unworthiness and the trouble she was bringing on her family. Admitted three weeks after the confinement, her symptoms were those of primary mental confusion with very slight depression. When spoken to she would look round the ward in a confused/

confused way till her attention was arrested by a slight shake and a repetition of the question. Her movements were slow and indecisive. When being taken to bed she would stand still whenever the nurse's hand was taken off her shoulder. She knew where she was and the reason of her coming; but was hazy regarding quite recent events. She said she did not feel actually unhappy, though she looked depressed. On being questioned she would begin an answer, stop after a word or two, and after a repetition of the question add another word or two. Then as the observer got up she would put out her hand to detain him and finish the sentence. She had the appearance and mental symptoms so prominent in many of the confusional conditions that precede recovery in excited cases. Her physical condition was poor and she had lost considerably in weight. Her complexion was pale and sallow. She had curious sensations after eating which gave her a feeling of depression in the cardiac region. Her pulse was 80 and of low tension. Her urine was quite normal. The blood shewed Haemoglobin 55 per cent, red corpuscles 4,000,000, and leucocytes 8,500. She was treated in bed, given large doses of Quinine and iron, and a liberal diet of milk, eggs and wine. A week after admission her Haemoglobin was

55/

55 per cent, red cells 4,200,000, leucocytes 9,000. After arsenic and 15 gr. doses of Haemoglobin for a week, her Haemoglobin rose to 65 per cent. In a month her weight had increased 9 lbs. Though still indecisive in speech and movement she was no longer depressed in any way. She recovered in 4 months. On discharge her Haemoglobin was 75 per cent, red cells 4,650,000 and leucocytes 9,000

This case certified as one of melancholia, seems to me better described as primary mental confusion with attacks of slight depression. The condition of the haemoglobin and red cells supports the theory of exhaustion being the primary cause of the mental symptoms. The leucocytes remained almost constant throughout and gave no evidence to support a toxaemic theory, but her appearance suggested a toxic element, and the balance of exhaustion and toxaemia probably kept the leucocytosis at a figure which was the same as the normal. Clinically the case conforms to the milder form of the intoxication psychoses of Kraepelin. The indecision and hesitation in speech together with the apparent clear appreciation of her surroundings and of questions brings into the case an element of Katatonia. During the later period of her illness, a slightly strained attitude when sitting up in bed together with the

above/

above symptoms gave her an aspect of mild Katatonic stupor.

The more stuporose forms of primary mental confusion, where the automatic psychic functions are markedly involved, and where the patient fails to react to any stimulation, were not represented in my cases except as a phase in some of the grave delirious cases.

Katatonic symptoms are of frequent occurrence in the puerperal insanities, and make their classification more difficult. Katatonia, described by Kahlbaum in 1874, was so-called because of the muscular rigidity present at certain stages of the disease.

At the present time the condition as described by Kraepelin, De. Fursac and others embraces mental states in which muscular rigidity on passive movement, waxen flexibility on movement of the limbs, great resistance to any movements impressed upon the body are met with, in addition to symptoms such as constant repetition of sounds, syllables, words or phrases, automatic repetition of certain movements, etc. Stupor is a constant symptom at some stage of the fully developed disease. Kraepelin [1] considers that/

(1) Kraepelin. Loc. cit. p.136.

Case of Confusion with Katatonic excitement , and attempts at suicide , which passed onto a state of Stupor , and is now in a condition of mild Dementia with impulsive homicidal and suicidal attempts .

that those cases of puerperal insanity in which there is no exhaustion or sepsis are cases of Katatonia. The case I have just described was undoubtedly due to exhaustion and influenza and yet it had Katatonic symptoms. The question of Katatonia is interesting in view of Kraepelin's (1) statement that the improvement after the subsidence of severe katatonia is not generally a real cure. In my cases, symptoms of a katatonic type occurred in a case which of all of them was most undoubtedly due to sepsis. A woman who died of acute septicaemia a few days after admission was wildly excited during that time. Her symptoms were those of delirium but she was very resistive, refused food at times stubbornly, took off her clothes and refused to put them on again. She would repeat "Yes, Yes," over and over again for 15 minutes at a time. All these were katatonic symptoms superadded to confusional excitement. Stereotypism was marked in many directions in the symptoms of two cases of insanity occurring in connection with eclampsic seizures. Many cases too with well-marked katatonic symptoms made good and apparently complete recoveries. According to Bianchi (2) katatonia is not /

(1) Kraepelin. Loc. cit. p.85.
(2) Bianchi. Loc. cit. p.729.

Case of Acute Confusional Excitement with Katatonic symptoms and frequent distressing hallucinations of hearing .

is not a disease in itself but a symptom which becomes engrafted on more or less profound confusion irrespective of origin, but is more frequent in females and young people. "It is the expression of a particular idiosynerasy." He places puerperal insanity in the katatonic variety of sensory insanity, a group of conditions all toxic in origin. Even my melancholic cases had katatonic symptoms in greater or less degree in some cases.

Bruce(1) as the result of his researches presents katatonia as a distinct clinical disease. The following case seems to conform to his description of a disease divided into (1) stage of onset (2) stage of stupor (3) stage of excitement.

C.H.S. married age 39, was admitted on 6th June 1905. There is no history of insanity in the family but her sister who visits her is distinctly nervous and peculiar. Her father died at 62 the result of a shock. Her mother died at 59 of something like creeping paralysis, and had a shock before death. Her mother had seven children, three of whom are alive, the others having died in very early infancy. Patient was very nervous and excitable as a child. She /

(1) Bruce. Studies in clinical psychiatry. p.134,

She remembers her father beating her as a child of seven and she went out afterwards, lay down and tore up the earth in her temper. She says she once threw a pot of boiling tea over her sister when they had disagreed about some little matter. She has always been very excitable during her menstrual periods. She had three illegitimate children, the first when she was 19, second 18 months afterwards, and the 3rd six years later. At the age of 34 she was married and four months later she had her fourth child. Two weeks after the birth, the confinement being quite normal, she had great worry and trouble on account of illness in her family, and having to remove her house. She went to her sister for a change but there she grew worse; her memory became defective and she got gradually more excited till she was sent to the asylum six weeks after the birth of the child.

On admission she had a very worried, drawn expression, but she was not actually melancholic, as even when repeating apparently depressing delusions she would laugh in a confused automatic manner. She refused to answer questions directly though she talked a great deal. She kept repeating "why do you all bother me? I have done no murder." She stared vacantly/

vacantly in front of her all the time, resisting and turning away if anyone took hold of her. Her pulse was 86 and her temperature 99.6°. She weighed 8 stone 5 lbs. The uterus and appendages were perfectly normal. She refused all food for several days. She had hallucinations of hearing fairly constantly and the only times she spoke were when, in reply evidently to her hallucinations, she would keep constantly saying more in an angry tone than anything else but with an embarrassed slightly drawn expression on her face "I have no baby. I am not Mrs. Smith, I did not murder anybody." At times she got quite excited and when controlled she repeated "why do you take hold of me!" but she never answered a single question put to her. After a fortnight she became more resistive and confused. She took her clothes off in the ward and when put to bed she wanted to get up and put her clothes on again: when most resistive she would bite and scratch and bang her head against the bed. At times she had periods of great restlessness and seemed to be always endeavouring to get at the window. Two months after admission she had erysipelas on the left ear and face. Her temperature was 100° and she was more resistive than ever. She would not allow a bandage to stay on. At this time she began to reply to questions occasionally. She had/

had opium without any effect and required occasional doses of paraldehyde. She soon recovered from the erysipelas and then hot baths were ordered. She resisted these violently and as she had increased in weight by 20 lbs and was very strong it was an exceedingly difficult matter to give her them. For a month after this she was restless and stubborn on alternate days and at times had active hallucinations of hearing. At this time, 4 months after admission, she got less resistive but began to wander aimlessly about the ward. She would move a chair round as if to sit down but immediately walk away again. She ceased speaking altogether and had to be fed with the spoon. She resisted every passive movement of her muscles. Her face still bore the same drawn expression but she betrayed no emotion at any time. She got more stuporose and began to take her clothes off again. From this time she resisted every attempt to assist her in anything. She would move about, stand looking out at a window for hours, would then sit down and with a hair pin pick under her nails performing the same movement for a whole forenoon. Then her hallucinations seemed to return for she would jump up suddenly and rush to the ward door, and her sudden outbursts made it advisable to put her in bed for some/

some time. Her temperature all this time was subnormal. For two months thereafter she was quite stuporose, requiring everything to be done for her. Then she developed suicidal tendencies, first trying to strangle herself in bed with a small cotton necktie she snatched from a nurse. She began to speak then but never in reply to questions, only to ask for a knife occasionally to cut her throat with. Gradually she became restless again and her hallucinations returned more frequently and then she became excited. She started by biting her lip through and violently hurting the nurse who spoke gently to her about it. She had to be kept in bed for her impulsiveness. She would grip the skin of her arm between her teeth and bite it right through. When asked why she did it she always said "I don't know," and would go on repeating this phrase at the same time making angry and determined efforts to bite herself. She began to talk about her marriage ring and when given a small piece of string she made a ring of it, tieing and untieing it for days. At this time she began to menstruate for the first time and ever since she has been irregular. When she does menstruate her face often becomes swollen and puffy but there is never any albumen in her urine. For the past/

past six months she has been in the same uncertain state. For a week she will work along with a nurse all the time in a restless fashion. All that time her conversation consists of one sentence. "I want home," a remark she frequently punctuates by upsetting a flower pot or smashing a pane of glass. At times she becomes very excited and has to be put to bed, resisting and striking. Three weeks ago she had a violent outburst, trying to commit suicide in every possible way and at the same time kicking and struggling. For a month past she has been quieter and saner than at any former period and she gives a perfectly lucid account of everything that has happened to her. She always apologises to every one she has injured during her struggles and says though she remembers everything she cannot tell why she refused to speak or to take her food.

During the past week she has been working, and every minute of the day she gives a short laugh, a curious impulsive quick expiration with a faint smile. She keeps this up all day though she can talk sanely. She says she is compelled to do it, but she cannot tell how.

The impulsive attacks, the stereotyped movements, the monotonous repetition of phrases, the stupor and the/

S T U P O R with symptoms of Katatonia ,
following acute confusional excitement .

the recollection of everything that happened during the excited and stuporose periods, the mutism and refusal of food are all characteristic of katatonia and the case seems to be one of progressive dementia with great preponderance of katatonic symptoms.

Some of the various katatonic symptoms were met with in cases of puerperal insanity which do not in any way conform to this description of katatonia as a clinical entity. Resistiveness seemed to be an almost constant feature of every case where there was mental confusion. Monotonous movements of various kinds, stereotypism, such for example as barking like a dog for hours, constant repetition of phrases and similar phenomena were found in some form in all the excited cases. Kraepelin (1) says the puerperium is very favourable to the development of Katatonic states of excitement and places under that category all the acute conditions which are not deliria of collapse or infective in origin.

The occurrence of melancholia was most frequent in the cases admitted some time after the confinement. It may accompany a condition of intense excitement however in the early days of the puerperium as in one case of acute collapse where the hallucinations were of/

(1) Kraepelin. Loc. cit. p.134.

of such an invariably terrifying type that the emotional tone of the woman was constant depression throughout her delirious excitement. In other acute cases the hallucinations alternated between terrifying and pleasing, giving an emotional condition of a circular type. The characteristic feature of most of my cases was that, in the absence of marked hallucinations, the emotional state was not marked and the confusion in most cases produced an absence of emotion or a marked disagreement between the emotional tone and the actual stimuli. True melancholia in the puerperal state is probably rare. In true melancholia the patient is quite clear about her surroundings and can give correct information regarding her condition. The mental confusion which was present in the cases of melancholia gave them in most cases an additional character.

The following case illustrates a case very closely allied with a pure condition of apprehensive melancholia.

S.G., age 34, a fortnight after her tenth child was born had removed to a new house and had a lot of worry. She belonged to a very nervous family and was a highly strung woman. In a week she became actively depressed, told her husband that something was/

was going to happen to her. She lost her sleep and for two days talked about being no longer of any use in the world as she could not look after her children. She then cut her throat with a razor. On admission she was acutely depressed, said she felt that something terrible was going to happen to her, and made determined efforts to choke herself with her bandages. She continued in this state for a few days, when erysipelas developed in the wound and she died a fortnight after admission. All the cases of melancholia, which was most common in those admitted after three or four weeks of apathy and listlessness, had a confusional element in the mental state. This is well brought out by the following case which also suggests the relation that exists between all the confusional states, the various causes such as exhaustion, sepsis, metabolic toxaemias, fevers, etc., producing a confusional condition superadded to a maniacal or melancholic state.

I.D.T. age 26, married, was admitted on 4th January 1904. There was no history of insanity in her family. She had one previous pregnancy and had no illness of any kind at the time. During her present pregnancy she was badly treated by her husband. Her aunt declared that she was literally starved. At the time/

time of her confinement she had no one to attend to her, a neighbour coming in at the last moment, and a doctor not being called till 24 hours after the birth, when she was very collapsed and ill. A district nurse attended her afterwards and she was in very poor health for three weeks. Then she became sleepless, began to sit about all day neglecting her child and her household. At night she was restless and sleepless, tossing about and weeping. On admission she was the picture of misery, paying no attention to anything done for her and absolutely refusing to answer any questions. Her temperature was 99°, she had no uterine tenderness or other abnormality. Mitral and aortic 1st sounds were rough and accentuated. For a fortnight she remained in the same condition. Her temperature was normal on the first day after admission and remained so. She took her food well and slept well after 2 drachms of paraldehyde for three nights. She lay in bed refusing to speak and when sitting up hung down her head, looking perfectly miserable and weak. After a fortnight she began to answer questions readily and correctly, but did not care to keep up any conversation. She had no delusions, her memory was good for recent events and she said she felt nothing but just a sense of weakness. She had Tinct. Strophanth, 5 minims thrice/

thrice daily. In three weeks she was smiling occasionally. After a course of Easton's syrup she began to feel stronger, was bright and energetic and was recovered in three months. She left better in health than she had been for years. Twenty four hours after getting home she took influenza and in another day she was back at the Asylum, her mental state exactly as it had been on her previous admission. She recovered again in 5 weeks. Here the attack of influenza produced the same confusional melancholia in two days which had followed the more prolonged exhaustion of the puerperium.

Katatonia again may be engrafted upon the melancholic state as in the following:-

E.R.C. has had attacks of melancholia at four successive confinements. A few weeks after the last she became peculiar in manner. Then she began to think she had done harm to her neighbours and ultimately had to be forcibly restrained from doing herself harm. On admission she was in a state of mental and motor excitement, saying she had committed a great sin, but was exceedingly talkative and resistive in addition and kept tearing at her clothes. For some weeks she was in this condition but quietened down and asked for work. She could not remain at it however but wandered aimlessly about the ward. She was quite/

quite clear in her memory and understood everything but talked in a confused unintelligible way. After a time she began to get very resistive, wanted to get to a different ward always and when taken there wanted back again. Then she had a period of mental confusion with refusal of food. For two years now she has been in a state of agitation, restless and resistive but quite clear in comprehension. At times she talks of her daughter having died and demands to be let off to the funeral. When in bed she sits up in a strained attitude and will not keep the clothes on. She is gradually becoming weak-minded.

Delusions were present in all cases, either as the fleeting delusions of confused mania and delirium or the more constant delusions of the melancholic states. In the quiet melancholic states the delusions varied from those of unworthiness to those of poison in the food, animals in the blood etc. A common delusion was one of suspicion and distrust of the relatives. In many cases delusions such as that men had entered the room at night were the expression of hallucinations.

A true delusional condition simulating paranoia but arising in an acute form may, according to Bianchi[1], arise in predisposed persons as the result of/

(1) Bianchi. loc. cit. p.742.

of toxic causes. The following case illustrates the hallucinatory variety of acute parancia as described by him.

M.T.A. was very exhausted during three weeks after her confinement. The lochia were arrested from the 7th day but she had no rise in temperature. At the end of the 3rd week she became very irritable and accused her husband of putting poison in her food. On admission she was depressed because of the constant presence in the walls of the ward of voices talking about her. She refused to see her husband on his visit still accusing him of poisoning her. Her delusions of poisoning extended to the nurses and she began to refuse the food. She spoke quite logically on other matters and worked intelligently but insisted that washing soda was put in her food. The toxic element was suggested by the fact that her Haemoglobin and red cells were about half the normal till months after her admission. She gradually improved in health but continued delusional and abusive. She is now chronic, working steadily but continually annoyed by the persecutions of people outside the ward. She often raps violently on the wall and scolds them. She conducts herself logically in every other respect.

Amongst/

Amongst the individual symptoms that call for special attention, refusal of food is prominent. This as I have indicated was present in various mental states. Every case required special attention with regard to feeding, but many required tube feeding. Some patients in acute confusional excited states took their food with a little attention, refusing it entirely only when the excitement abated and the katatonic stage ensued. Others refused all food in the acutely excited stages. The most persistent refusal occurred in the markedly deliricus cases when the patient was completely disoriented, but some of these, when the symptoms abated for a time, took their food even when a great degree of confusion was present. Amongst the cases of katatonic stupor some took food without resisting, others had to be fed with every meal. In delusional cases the food was refused because it had been tampered with, while in two case of melancholia it was refused because of the delusions of unworthiness which the patient had.

Erotic manifestations were only present in the course of 4 cases. They are generally considered a feature of puerperal insanity. Bevan Lewis (1) considers/

(1) Bevan Lewis. Text-book of Mental Diseases p.399.

considers it a prominent symptom ; " despite the adverse views of high authorities upon this point, there is abundant evidence in support of the view that this sexual element stamps the insanity of parturition and the early puerperal period with features that demand special attention."
I cannot account for its absence in so many of my cases, except by the fact that I found it diminished greatly in the cases where it was prominent under vaginal doucheing. I believe repeated vaginal doucheing which was undertaken in every acute case from the onset had something to do with it, probably by soothing reflex stimulation.

Homicidal and suicidal impulses are the most important of all the individual symptoms. The extraordinary explosiveness of the mental symptoms leads to these impulses in cases where the mental state would not indicate them. Homicidal assaults upon relatives and later upon nurses were present in cases of very different forms. A case of septic delirium tried to strangle her mother before being brought to the Asylum. Another case of acute excitement which afterwards terminated in a fatal septicaemia tried in the first few hours of her excitement/

excitement to put her baby on the fire. Suicidal attempts were noted in most of the melancholic cases but impulsive attempts were seen in the most confused and excited. The case which most nearly approached a condition of typical mania, in addition to being impulsively violent, made several attempts to choke herself after moments of the most hilarious excitement. Attempts at suicide before admission were recorded in 13 cases. Three of these were cases where the patient tried to get out at a window evidently to escape her hallucinations. Four patients in acute delirious excitement were in danger of accident by climbing up to windows, but in these cases the exact nature of the impulse was difficult to determine. Two cases of melancholic confusion took small quantities of Belladonna liniment. One case succeeded in cutting her throat, while two attempted suicide by drowning. In many other cases there were impulsive attempts to escape from restraint which might have ended in accident. Sir J. Batty Tuke[1] pointed out that the suicidal tendency of the puerperal woman is more an impulse than the result of a perverted train of thought.

The/

(1) Sir. J. Batty Tuke. Edinburgh Medical Journal May 1865. p.1018.

The presence of homicidal impulse as manifested in the aggressiveness of many acute cases bore a resemblance to epileptic impulsiveness. The following case is interesting because the impulse to infanticide was the one prominent feature of the illness. C.S. age 29, married. Her parents who married very early in life, had a large and rapid family and she was the tenth. Her brothers and sisters were all far from being robust and some of them were like herself very nervous. She was always a timid woman, easily alarmed, but had enjoyed fairly good health. This was her fourth pregnancy and she had had all four in the space of 34 months. She was always in poorer health than usual during pregnancy.

She was confined three weeks previous to admission. Ten days after her confinement she was up and going about feeling a little run down and nervous. A few days afterwards she told her husband that she felt a strange impulse coming on her at times during the day to kill her children. A nurse was at once obtained and she said she felt relieved. The desire still came on her at times and she felt very depressed because of it. Two days before admission she threw herself into an area from her window/

window, sustaining serious injuries and was sent to the asylum.

On admission she was greatly upset because of her condition, but there was not the slightest impairment of intellect. She conversed readily and said she felt much less depressed now because she had been taken away from her children and could not harm them. She says she committed the attempt at suicide simply because of the dreadful impulse that prompted her to kill the children. She felt as if she were two persons at times; one prompted her to think of doing herself harm while the other at the same time kept urging her to kill her children. She insisted that the idea of doing away with herself never occurred to her until she had been for several days distracted with the constant recurrence of the homicidal impulse. A week after admission she felt an impulse to stick a needle into her heart and asked to be put away where she could be chained up to prevent her injuring herself. All this she related in a perfectly intelligent way and it could be easily seen that she became depressed only when the homicidal impulse was strongest. For a few days she heard a voice which she knew to be an hallucination saying to her "you must do it;" she said it seemed to be a part of herself speaking. Three weeks after admission she had much improved physically/

physically and her impulsive desire left her. She soon became her normal self according to her husband and her condition then was one of peevish discontent, grumbling at the slightest inconvenience. She was removed recovered four months after admission.

PATHOLOGY.

As yet the pathological conditions underlying the acute insanities are very uncertain and it would be quite useless to make any general statements from what has been done in the pathology of insanity occurring during the puerperium.

As regards the brain, Campbell Clark[1] laid special stress upon the presence of cerebral congestion in all cases where excitement, delirium and hallucinations were the prominent symptoms with concomitant toxaemia of some kind or another. This congestion of the membranes, grey matter etc., has been described by others in the brains of persons dying of acute mania. Macpherson says that no such signs as congestion in mania and anaemia in melancholia are constantly apparent and believes that the naked eye appearances of the brain in those dying after single attacks of mania or melancholia present nothing distinctive. With regard to the confusional states Paton[2] says "little regarding regarding the pathology is known." The change most commonly met with is a chromatolysis of the nerve cells. According to Macpherson chromatolysis is to be/

(1) Campbell Clark. Journal of Mental Science. July 1887.
(2) Paton. Psychiatry p.275.

be found extensively present in the brains of those dying in the course of stupor, acute primary confusion and the delirium of collapse. The relation of exhaustion in the causation of these forms of insanity which are frequent as varieties of mental disease in the puerperium is interesting in view of the changes in the neurons, which result from fatigue as described by Sir John Batty Tuke.(1) These changes induced by experimental fatigue practically amounted as regards the nerve cells to the early stages of chromatolysis.

Orr (2) has noted alterations in the myelin sheaths and axis cylinder in acute insanity. At present the pathology of these insanities is a question of the accumulation of facts.

There is no class of case in which it is more difficult to obtain a post-mortem than those of women dying after childbirth and I have only been able to perform two. One was a case of delirium diagnosed as due to meningitis in which the symptoms appeared five months after the confinement but where the woman had been depressed and amnesic since a week or two after the confinement. In this case the/

(1) Sir John Batty Tuke. Morison Lectures. 1894.
(2) Orr. Brain Summer 1902.

the chief features found post-mortem were; slight thickening of the dura mater and the presence of three small sub-dural haemorrhages, one over the left middle occipital convolution, one above and one below the left lobe of the cerebellum. Otherwise the appearance of the brain was normal. The second case was one in which symptoms of depression and exhaustion had lasted for four weeks from the confinement, when the worry of a house removal, and the onset of a tonsillitis produced acute delirious insanity and death in four days. The post-mortem examination shewed the following changes. The kidneys shewed a slight degree of interstitial nephritis. The uterus was normal, the mucous membrane darkly stained, but shewing no signs of sepsis. The dura mater was thickened in one small patch about an inch in diameter in the middle line over the vertex. There were some granulations in the floor of the 4th ventricle. On chiselling through the petrous portion of the temporal bones, on both sides the middle ears were found to contain a quantity of grumous material, the bone being eroded in both cases. Sections of the brain were stained in methyl-violet. Many of the capillaries were greatly dilated and there was slight hypertrophy of/

of the neuroglia of the white matter. The nerve cells shewed almost complete loss of the chromophile elements of the protoplasm. The nucleus shewed very little change except that here and there was a cell which shewed some breaking down of the nucleus.

The urine of every patient was submitted to careful examination on admission and at intervals during the course of the disease.

The quantity of urine excreted daily varied in different cases. In almost all the acutely excited cases which were admitted within a few days of the onset of the attack there was a marked diminution in the daily out-put of urine. In most of these cases it was highly coloured. After the patients had been treated for some days however, put on fixed quantities of fluid and the general condition attended to, the urine in all cases returned to a fairly normal amount. A more persistent diminution in the amount excreted was noted in a few of the melancholic confusional states that were admitted later, but in these also the quantity soon returned to about the normal.

In the acutely excited states urea was quantitatively estimated in 10 cases. In 6 cases it averaged from 15 to 25 grammes. In the other

4/

4 it was between 30 and 35 grammes. On examination at the end of the first week the amount of Urea had risen in all these cases to over 25 grammes in 24 hours. Albumen was present in six cases on admission. In two cases the patient's mental symptoms followed eclampsic seizures. In the first case the excitement followed soon after the fits, and here the precipitate of albumen amounted to half the volume of urine tested. In five days it had gone down to a mere trace which continued for three weeks. In the second case the insanity followed three weeks after the confinement, the eclampsia having occurred a few hours after labour, and here the albumen on admission was a trace only, which disappeared at the end of a week. In two cases the albumen was due to contamination with the lochia and on careful withdrawal a second time on the day of admission there was none, nor was there any at later examinations. A faint trace of albumen was present for several days in a case of melancholia admitted three weeks after confinement. In the sixth case the woman had albumen in traces during the whole stay and also on a subsequent admission unconnected with the puerperium. Taking the two eclampsic cases into account, albumen was only found/

found in three cases where it could have any relation to the onset of the puerperal insanity.

Indican was present in excess in all my last seven cases. This excess was greater in some cases than in others but in all of them the amount was normal by the end of the second week, that is long before in any of the cases there was any real improvement in the mental condition.

I have not made any estimation of chlorides in these cases. Campbell Clark (1) drew special attention to the fact that in 17 cases the chlorides were found scarcely traceable. Bruce (2) finds that in mania with confusion the excretion of chlorides is diminished in the early stages and considers that this is another link in the chain of evidence that acute mania is a toxic disease in which the chlorides are retained for some purpose of the bodily economy just as they are in other known bactericidal conditions.

During the past few years much information has been gained regarding the pathology of acute insanities from an examination of the blood. I have been in the habit of examining the condition of the haemoglobin /

(1) Campbell Clark. Loc. cit.
(2) Bruce. Loc. cit. p.103.

haemoglobin and red cells in all puerperal cases and during the past two years I have included in the examination an estimation of the leucocytosis. As regards the red cells and haemoglobin these examinations have given fairly uniform results, shewing the fall that occurs in the haemoglobin even in cases where there has been little or no post-partum haemorrhage. The leucocyte counts have shewn results which at first sight seemed confusing and in many cases made one extremely doubtful of their accuracy even in the face of repeated estimations but a further consideration of them seems to point to what is universally admitted, namely the complex nature of the causation of insanity occurring during the puerperium. Some of the cases bear out different points and I believe it will be best to give a detailed account of these, noting the mental and physical symptoms in conjunction with an account of the blood examination. In a number of the cases antistreptococcic serum was used in treatment and I shall also allude to the effects produced by it as noted in the blood examinations.

Bruce(1) who has done such an enormous amount of work upon the examination of the blood in the acute insanities/

(1) Bruce. Loc. cit. p.117.

insanities deals very shortly with the question of puerperal insanity which he says includes many varieties. He believes that most of the cases of excitement occurring during the puerperium belong to the class of mania with confusion, a condition in which he finds evidences of a bacterial toxaemia indicated as far as the condition of the blood is concerned by a high leucocytosis during the maniacal stage. In one case which I shall describe immediately my results agree with this but in others the condition varied greatly. For example in a case of acute excitement which followed on a long delayed labour with much exhaustion, the leucocyte count never rose above 11,000 and on the excitement subsiding in a few days, the leucocytosis fell to 6,500. Take again the generally accepted law that the formation of an acute abscess is followed by a high leucocytosis. I made leucocyte counts three times a day in a case of delirious mania where the leucocytes remained at 8,000. An abscess formed in one breast and later in another and yet no leucocytosis occurred. This was one of my first cases and so struck was I by the fact and so conscious that I might be in error that I made estimates three times a day in many cases, with ample controls/

controls and found the condition stated.

The most notable fact regarding the Haemoglobin was the progressive diminution in the amount that occurred in the fatal cases. The red cells also shewed great diminution.

The following case of acute confusion with excitement shewed an increase in the leucocytes during the maniacal period.

J.K. single, age 21. No history of insanity was admitted but the girl had a decidedly neurotic appearance. She had always been in excellent health and had been working in the fields up to within a few days of her confinement. She had worried a good deal about her condition. Nine days before admission she gave birth to her illegitimate child. The labour was quite normal, she was attended by a trained nurse and had vaginal douching twice a day from the first. She was very restless on the 4th day but quietened down again, becoming suspicious and strange in her behaviour on the 7th day after having slept none for two nights. She got more restless and becoming very talkative and violent she was sent to the Asylum.

On admission she was wildly excited, walking up and down the room swinging her arms about, cursing and shouting out in an incoherent manner. Her ideas tended/

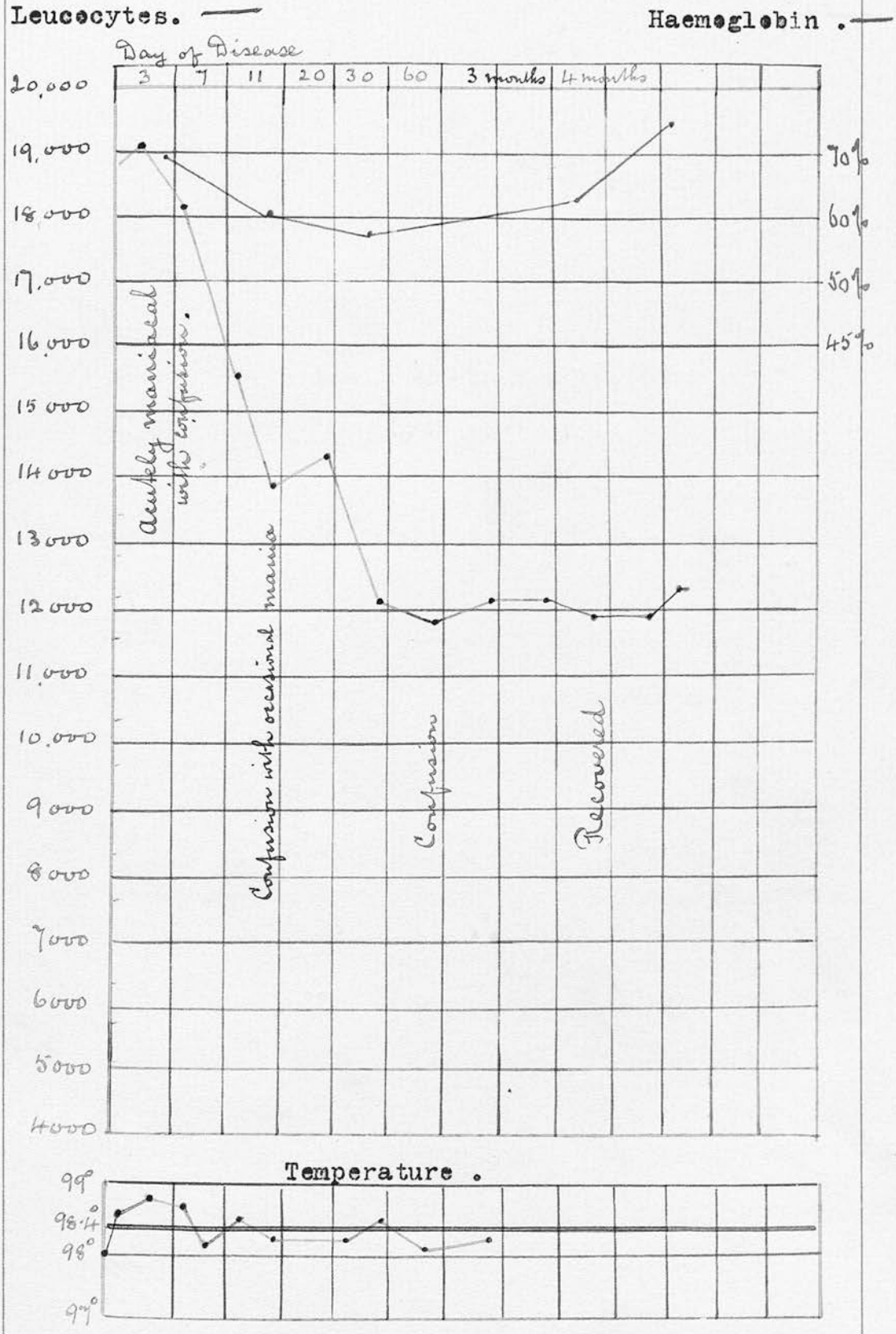
tended usually to a religious type. She would clap her hands for a long time, staring vacantly in front of her, and then suddenly shout out that God had told her she was all the better for not being married and that he would bless her child. She paid no attention to anything said to her and seemed not to notice anyone. Then she would talk in a rambling way about committing suicide, soon after swearing and singing. With all this she was quite confused. Her face did not change its expression whether she sang loudly or called on the Almighty to save her. Her general bodily condition was poor, she had a hectic colour and seemed somewhat weak. Her knee jerks were slightly exaggerated. Pulse was 90, of low tension. Her temperature was 98.6° Her urine presented no abnormality, but there was a very large deposit of urates. She was not constipated. Her temperature was 98° and the lochia were arrested. The following day her blood was examined. Red cells 4,025,000, Haemoglobin 70 per cent, Leucocytes 19,000. She continued in a very excited condition for three days during which she fought continuously with her nurses, struggling aimlessly against them, biting and scratching.

At the end of a week she had become much quieter/

quieter under the influence of the hot bath three hours a day. Her temperature remained between 98°.2 and 98°.8. By that time the leucocytosis had fallen to 14,000. For a month thereafter she remained in a condition of mild confusion with occasional short outbursts of excitement. She had hallucinations of sight during one of these, seeing the father of the child at the window and attempting to rush out to him. She mistook the identities of many people, talking to them about past events in a rambling way and addressing them by the names of former companions. She asserted for a long time that she was Jesus Christ. Two months after admission she was quite quiet and almost well but for a slight hesitation in replying to questions. At this time her leucocytosis had fallen to 12,000, at which figure it remained when she was discharged recovered. The red cells and haemoglobin in the above case call for no remark. Both coincided with the condition found at the normal puerperium. Looking to the state of her bowels and the absence of any sepsis there was difficulty in locating any source of toxaemia although her mental condition and general appearance were very suggestive of such a state. There was certainly a fair amount of exhaustion present/

J.K. Case of Acute Mania with Confusion .

(of apparently non-septic origin) .



present and her apparent neurotic tendency, which was distinctly evident on her recovery and somewhat delayed her discharge, probably permitted the operation of microbic toxines from an intestinal source it may be. The leucocytosis of 19,000 was not remarkably high and here as in all early puerperal cases we have to face the question of what the normal leucocytosis would have been. The leucocytosis in the normal puerperium is a somewhat variable quantity. According to Henderson (1) the average leucocyte count at term is 21,000 per cub. m.m., though others quoted by Emery (2) give other figures most of them much lower. The number of leucocytes in normal circumstances falls rapidly during the first week of the puerperium, more slowly during the second attaining its normal level at the end of the second week. If 12,000 the number on discharge was near the normal in the above case, then 19,000 at the tenth day may have been a normal number at that time. At the 17th day by which time the acute excitement had passed the leucocytes numbered 14,000 and they continued at this with very slight increases for a month during which time she had slight exacerbations of excitement/

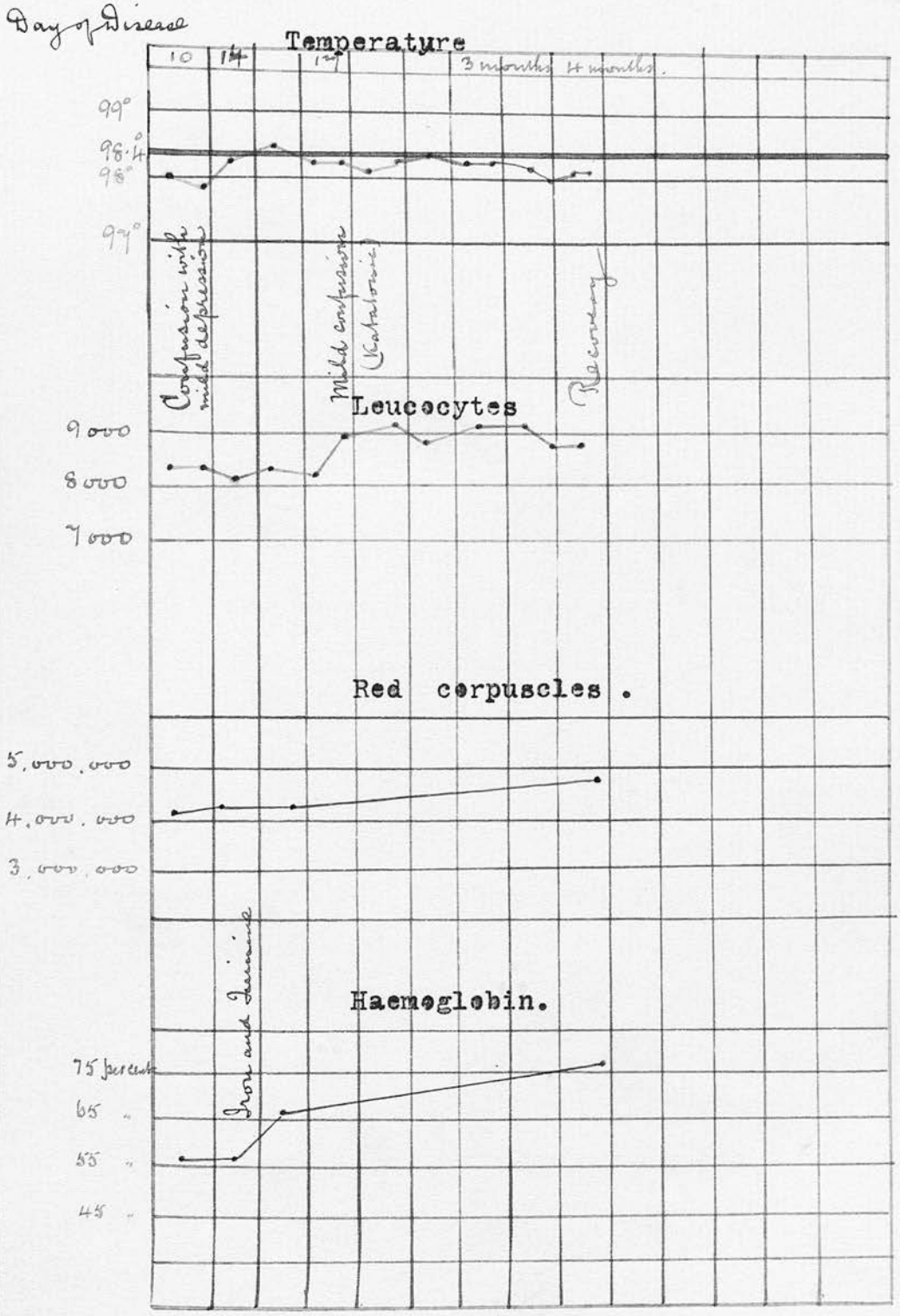
(1) Henderson Journal Obst. and Gyn. of British Empire. 1902.
(2) Emery. Practitioner. March 1905. p.420.

excitement. The leucocytosis therefore may be taken to have some relation to the cause of the mental excitement. Her leucocytosis of 12,000 on discharge points to a condition remarked upon by Bruce, when he says "patients who present a persistent hyperleucocytosis after recovery must have some other source of toxaemia akin to that which causes excitement with toxaemia of non-puerperal origin and these patients are liable to relapse." The unstable appearance of this girl suggested that she was a very likely case to relapse.

Take now the case R.G. described already under symptomatology and it presents a striking contrast to the last as far as the mental symptoms are concerned. Although the apparent prominent symptom seemed to be depression, yet on close examination it was found to be more a confusional case than anything else, the lack of physical energy due to exhaustion suggesting more mental depression than was actually present.

In this case the blood examined on admission shewed Haemoglobin 55 per cent, red corpuscles 4,000,000 leucocytes 8,500. The Haemoglobin increased steadily in amount and the number of red corpuscles rose to normal, but in spite of the apparent toxaemia in this woman's case the leucocytosis only varied to the extent of rising to the normal 9,000 in/

R.G. Case of mild stupor and melancholia after childbirth and influenza.

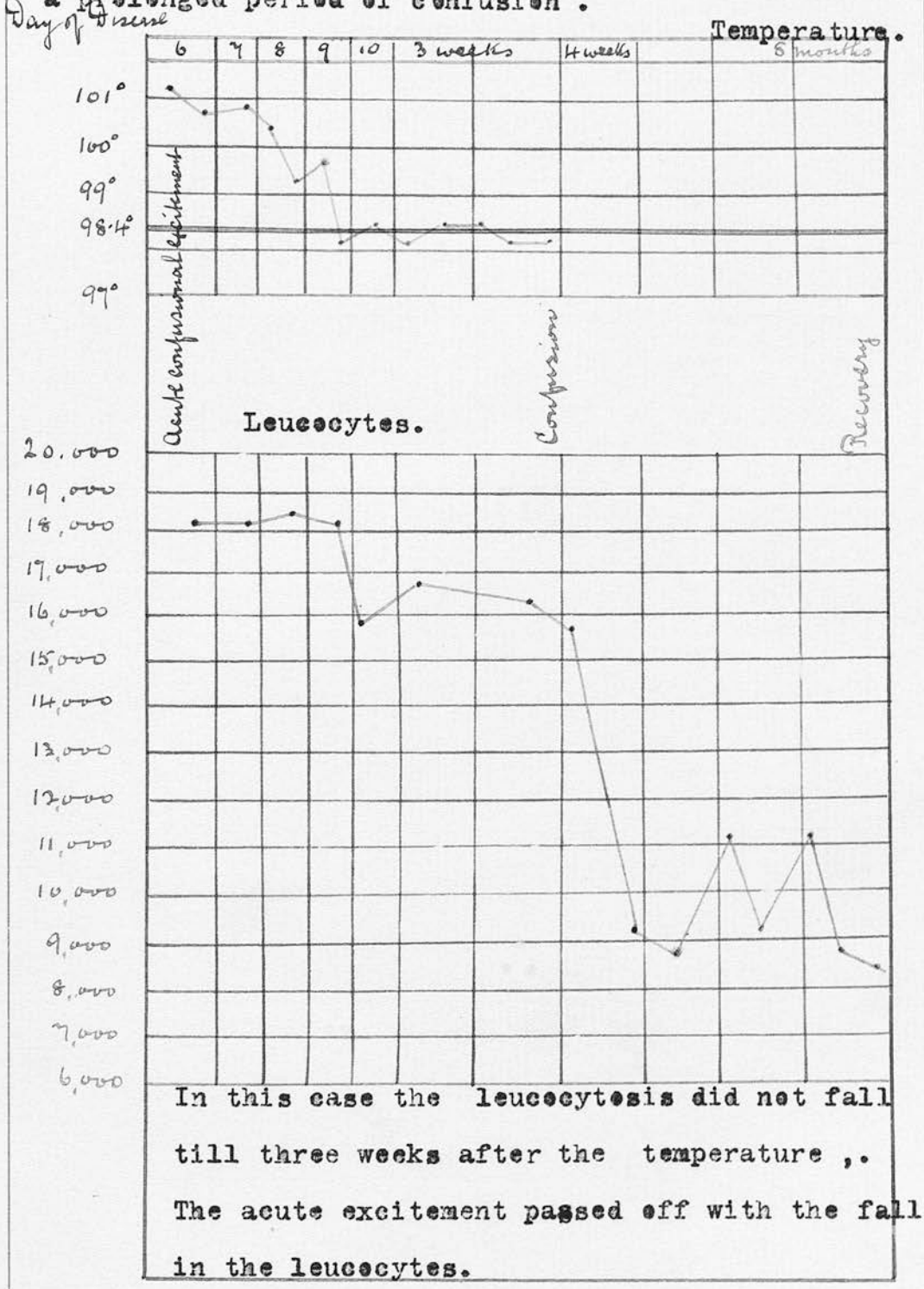


in a few weeks. This condition of the blood suggests more a purely exhausting causation without the addition of any microbic toxaemia.

The blood was examined repeatedly in two other cases of melancholia with confusion and in both cases there was no increase in the leucocytes at any period during the disease. The red cells shewed a slight decrease in both, and, as in so many cases, the Haemoglobin at first was much below the normal.

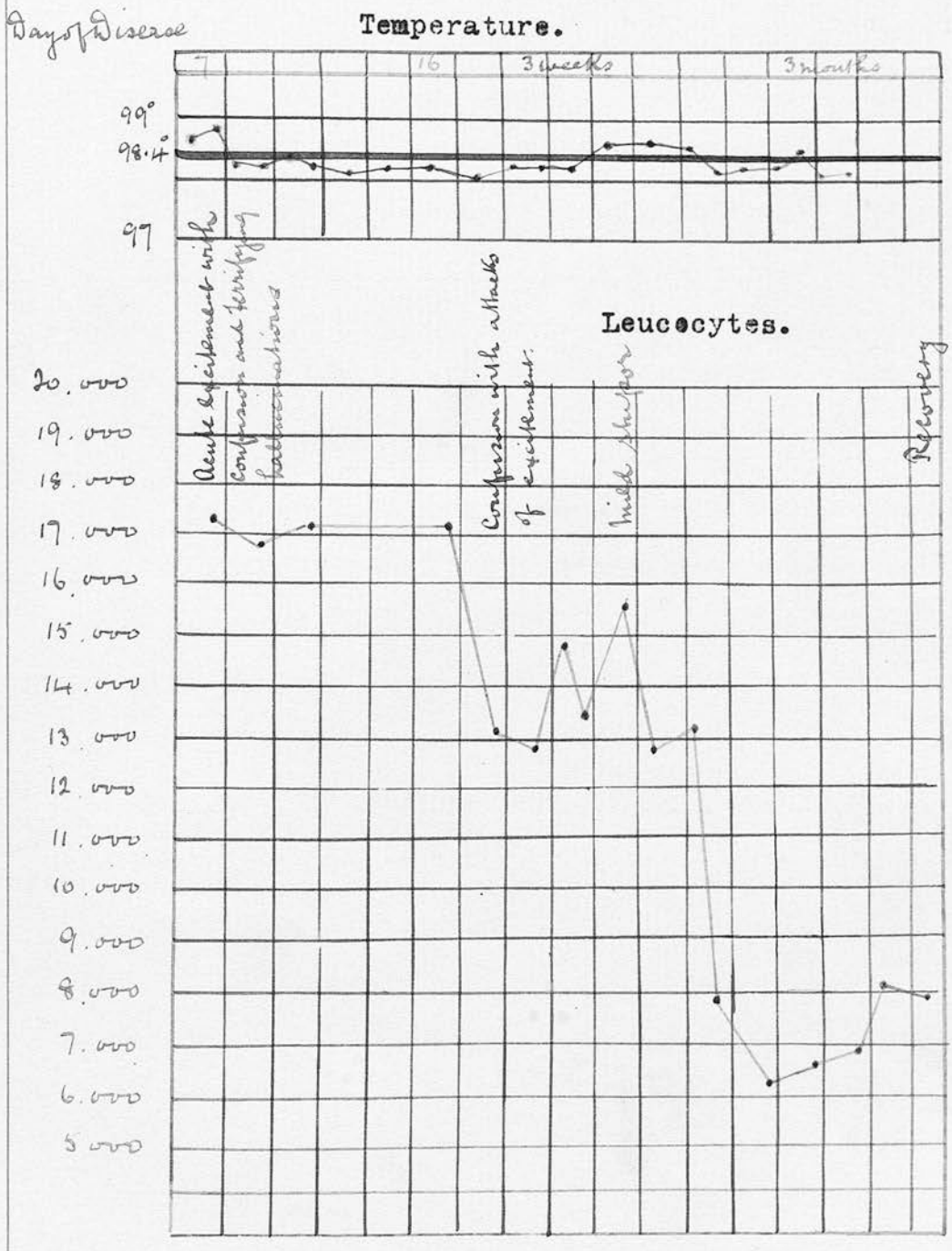
Two cases of acute mania with confusion that recovered were also examined regularly. In one of these, there was a temperature of 101° on admission and offensive lochia. The leucocytes examined six days after the onset of the acute symptoms shewed.a leucocytosis of 18,000. The temperature fell to normal in five days and then the leucocytes fell to 16,000. The excitement continued for three weeks and until the end of that time the leucocytosis remained between 15,000 and 17,000. There was a fall to 9,000 in a week after that. A slight rise to 11,000 was present on one or two occasions during the following month but there was no return of the excitement. During this month the patient was in a slightly confused condition and as/

Case of Acute confusional Mania with offensive lochia and raised temperature for five days, followed by a prolonged period of confusion.



In this case the leucocytosis did not fall till three weeks after the temperature ,. The acute excitement passed off with the fall in the leucocytes.

Case of acute excitemant and confusion ,with acute exacerbations due to terrifying hallucinations .



as this passed off the leucocytes remained stationary at 9,000. In the second case which was one without any apparent sepsis but with a strong heredity, the leucocytes three days after the onset of the acute symptoms numbered 17,000. The acute symptoms lasted a week and by this time the leucocytes fell to 13,000. There were slight exacerbations of excitement from time to time for three weeks and after that the patient was only slightly confused, talking and behaving rationally. The leucocytosis fell to 8,000 and later to 6,270, remaining low for about ten days and gradually rising to 8,500 in three months when the patient had completely recovered.

The most interesting results from the blood examination were obtained in the fatal cases and I report two of these in full as they are different varieties of so-called acute deliricus mania, both cases fatal, but presenting marked difference in the degree of delirium. That a toxaemia is at work where the leucocytosis does not indicate it is I think manifest in both cases.

M.M.H. aged 24, married, was admitted on 15th February 1906. Her father was a heavy drinker but there was no hereditary predisposition to insanity/

insanity, so far as could be ascertained from the friends or family physician. She had always been a healthy active woman and during the pregnancy, which was her first, she had not had any illness or been out of her usual. The labour was somewhat delayed and there was considerable post-partum haemorrhage. She was very weak till the 10th day and her mother, thinking to look better after her, had her removed on a very cold day, while the mother's house to which she went was according to the doctor's statement a very dirty one. She was much upset by the removal and did not sleep well for three nights. On the 14th day her temperature went up to 100° after a rigor. That evening she was restless and unusually talkative. The following day she was excited, talking incoherently, mistaking the identity of her friends, and, becoming very noisy, she was removed to the Asylum.

On admission she looked very weak. She was exceedingly thin, her complexion was pale and slightly sallow. Her temperature was 101.8°, her pulse 100, small and of poor tension. There was no discharge from the uterus, and a complete examination revealed no tenderness on palpation in any region. There was a fair amount of milk in the/

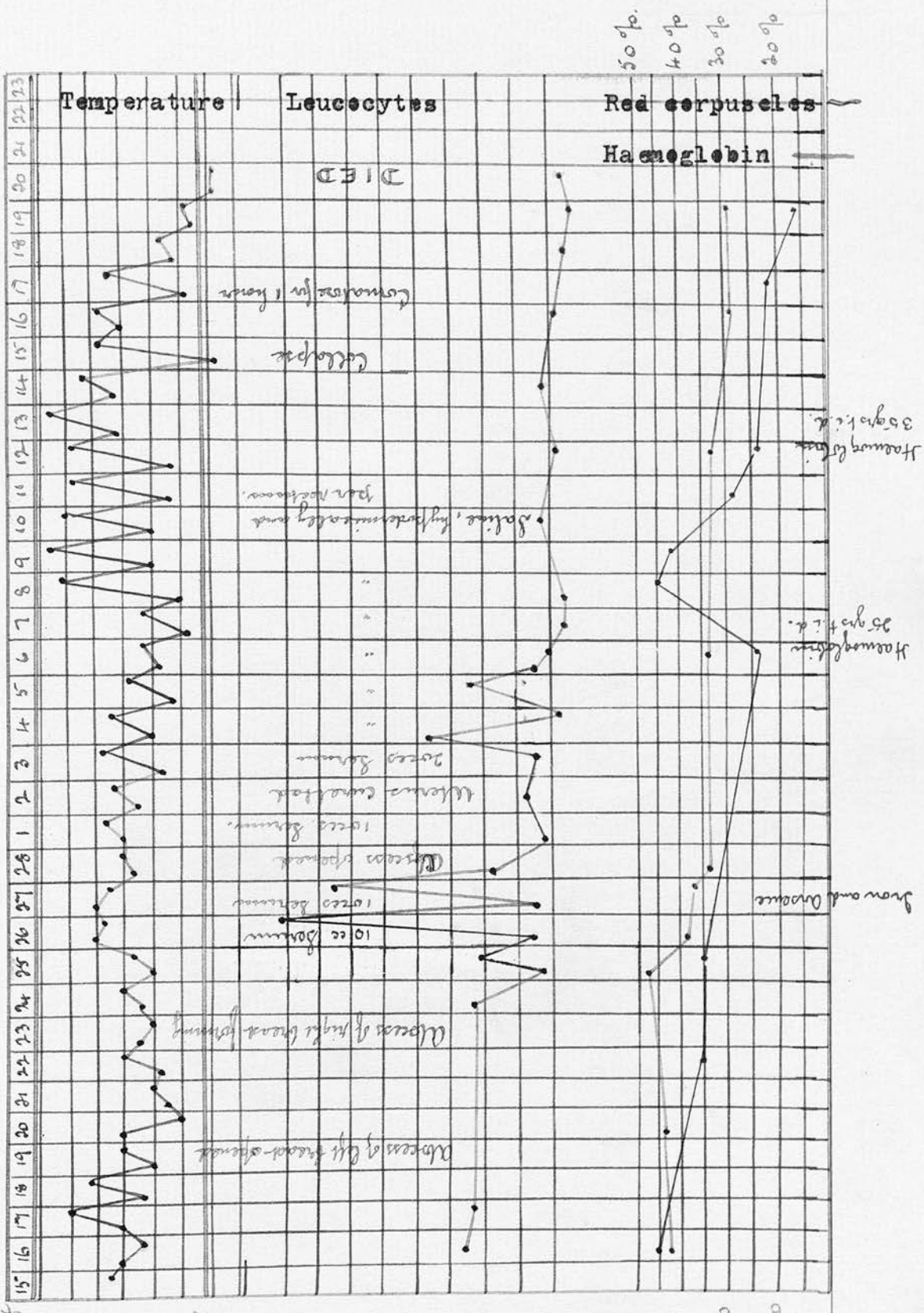
the breasts on which she had belladonna plasters. Her pupils were markedly dilated. Her alimentary tract was much disordered, and she was refusing food. She had been very much constipated but this had been attended to in some measure before her admission. Her tongue was furred and tremulous. Mentally she was very excited and confused. She paid not the slightest attention to anything said to her but went on talking incoherently about her husband, her home, motor cars, bicycles, etc. She would stop in the midst of her rambling talk to sing a verse or a few lines of a hymn. In spite of her confusion, if a question were persisted in, she would usually give a reply which although of itself incoherent and often amusing indicated that she grasped some idea of what was said to her. She had continuous illusions. She addressed the Medical Officer as soon as she saw him by the name of her own family doctor. His step coming up the ward made her shout out at once to her husband to "come quickly David." Her emotional condition was very variable but never deep. When she spoke to her husband, who she fancied was somewhere about, she would scold him and then as she started to sing a song would break out into laughter. At times she would scream loudly/

loudly in an aimless and apparently automatic manner. Her flight of ideas was to a certain extent consequent like that of pure mania, but usually her incessant talk was prompted and varied entirely by her continual illusions and everything that met her eyes or ears.

The day following her admission, 15 days after her confinement, her blood examination shewed the following: Red Corpuscles 4,040,000, Haemoglobin 45 per cent, Leucocytes 9,500. This leucocytosis was considered doubtful in view of the fact that an abscess was forming in the left breast. The count was repeated the following day with the same result combined with no less than five controls.

Her temperature continued to swing between 100° and 102° for four days. It fell slightly when the abscess of the breast was freely opened on the 4th day but rose again in 24 hours to 101°. Two days after the opening of the abscess her mental symptoms abated slightly. She was then a little more attentive to questions but invariably used the last word of her reply as a cue to start on an incoherent rambling again. Towards evening she became more excited always and then had hallucinations of hearing. She heard her husband calling her when the ward was absolutely still and she talked of seeing//

Case of M. M. H. Delirium (septicaemic) ending fatally.



seeing a bright star in the roof. She was taking large quantities of fluid nourishment every two hours. She slept usually five to six hours after hot milk and whisky. Nine days after admission, an abscess began to form in the right breast and the leucocyte count which was made twice daily shewed a leucocytosis of 7,000 only. A differential count shewed 70 per cent of polymorphs. The abscess in the breast increased rapidly. Next day with the leucocytosis at 7,500 at 10 a.m., 10 cc.'s of antistreptococcic serum were given and at 11.45 a.m. the leucocytosis had risen to 15,000. In the evening it had fallen again to 8,000. Next day the serum injection was repeated and the leucocytosis one hour afterwards had risen to 13,350. By this time the red corpuscles had fallen to 3,050,000 and the haemoglobin was 35 per cent. The same evening the breast was incised in several places and freely drained of pus. Films of the pus were stained and shewed staphylococcus Aureus. On the third day of the serum treatment the leucocytosis did not rise above 8,440 at the usual time at which it was estimated between one and one and a half hours after the injection. There was still no sign of any uterine discharge but the vagina was regularly douched/

douched twice daily with carbolic solution. On 1st March a scraping of the uterine surface examined microscopically demonstrated the presence of streptococci. In view of this and the desperate condition in which the woman was, it was determined to curette the uterus. This was done and the interior was swabbed with pure carbolic and afterwards douched with weak solutions of lysol. The effect of this upon the temperature was imperceptible. Before the curetting was carried out, a further bacteriological examination was carried out by an expert, who reported a mixed infection of streptococci and bacilli coli communis. After the curetting the mental excitement seemed to abate but from this time onwards her condition was one of mild delirium. Her hallucinations were more marked at one time than another, but she continually had numerous illusions and was very excited and restless towards evening. She knew she was in a hospital because of the other beds, but she was markedly disoriented as regards time and place generally. Her emotional tone remained rather hilarious and she was tricky and mischievous even at her weakest. Her conversation was very rambling always and was usually suggested by illusions of sound, but she could answer simple questions correctly.

The/

The following note of her rambling talk illustrated her mental condition. "If you can keep a secret you know what to do, but a wife's a wife you know. (Nurse starts to replace her bandage) Hurry up and don't keep me long. I wonder if she knows the difference of a clock and a steeple (evidently a conundrum she has heard). What kirk do you belong to? (a pause) Tell her to come home to her mother. Have you seen the dog with the big lugs?, you should see it and our cat, the sly little puss lying behind the door. (Day nurse dressed for going out appears to say good-night) I see you can't ride in a motor car without your veil and goggles. Get me a chain for the dog. Is she still standing there yet? I wonder whose marriage she is going to? (Sleeps for a little). I once climbed the brae myself. We are not wanting any bairns here. (Nurse puts her keys down on a table) I have no keys here. David has them. I want to look for my David. Will he not come? (Nurse puts an extra pin in her breast bandage) I am not wanting any pins just now. I will let her know what her mother is suffering. No more corn here, just enough for David's horse. Oh the horse has a boil on its head. (Special nurse walks down towards her). Eh nurse you are very soft /

soft footed to-night. (After a pause gets a little excited) Do you see that star there changing colours. See who can change the signal behind the door. If she thinks she can defy anybody she is mistaken. (Another nurse appears) What are you doing with green bands on your coat? All this time she was smiling or scolding and following the creations of her disordered imagination. As can be seen from the example of her conversation she had her attention arrested for a little by a new scene, but at once relapsed into what Macpherson[1] has called a "world of phantasy." Antistreptococcic serum was given in doses of 20 cc. daily but with no apparent benefit. On 6th March her leucocytosis was 7,000, red cells 3,375,000. Haemoglobin 25 per cent. After several drugs had been tried without effect, pure Haemoglobin was given 15 grs. thrice daily and the Haemoglobin rose to 45 per cent in two days, only to fall steadily again. She gradually got into a collapsed condition and the intra-uterine doucheing was almost always a source of danger, so weak was she. Saline enemata had been given for many days and latterly subcutaneous injections of two and three pints of normal saline were given. Hetraline was tried. Large quantities of alcohol failed to make any difference and she became/

(1) Macpherson. Loc. cit. p.241.

became weaker. Once she was comatose for an hour after the exertion of spongeing her, but hot applications over the heart revived her and she lived for other three days. She became very lucid towards the end, but again became comatose and died on the 28th day of her residence. Her temperature fell steadily from the fifth day before death and was normal for the first time 16 hours before death.

The above case looks very like a case of puerperal septicaemia with mental accompaniments. It must be noted however that according to the statements of the family physician the initial mental symptoms were present before the elevation of temperature took place and that the acute excitement was concomitant with the first rise of temperature. Acute delirious mania apart from puerperal cases is accompanied by a pronounced elevation of temperature. It also arises in connection with exhaustion from various causes and the exciting cause may be microbic.

Savage (1) says it is extremely difficult to distinguish between true septic mania in the puerperium and acute delirious mania. According to him the temperature in the acute delirious cases is little/

(1) Savage. Dictionary of psychological medicine. Vol. 2, p.1039.

little above 101° and in the septic cases there is greater irregularity and a higher temperature. The presence however of streptococci and bacillus coli communis in the uterine cavity early in the disease seems to stamp this as a case of puerperal septicaemia with mental excitement. The leucocytosis is very interesting in view of the fact that ordinary puerperal septicaemia is always accompanied by a rise in the number of leucocytes. In the above case there certainly was a slight rise after a time in thepolymorphs but, as Emery(1) points out, the rise in the normal puerperium is due mainly to an increase in the polymorphs so that the differential count in puerperal septicaemia is not of much value. In his experience he has never met a case of puerperal septicaemia which was not attended by a leucocytosis. He says that in some other forms of septicaemia there may be no leucocytosis or even a diminution in the number of white cells but these cases are extremely rare and always end fatally. My estimations of the leucocytosis may in virtue of their continuous repetition and the number of controls be taken as accurate and here we evidently have a case/

(1) Emery. Loc. cit.

case where in virtue of some other condition the resistive power of the patient was so lowered that a leucocytosis was impossible. The previous exhaustion may account for part of it but it may have to be sought for in some deeper cause which also brings about the acuteness of the attendant delirium. The rise in the leucocytosis caused by the injection of serum which gradually lost its effect in that respect suggests that the dose ought to have been greatly increased. In giving the serum I at first confined myself to the ordinary 10 c.c. dose and in some cases was influenced in discontinuing it by the fact that the temperature rose instead of falling as a result of the administration. Probably had I increased the dose sufficiently to influence the leucocytosis and also stimulated it by the administration of nuclein as suggested by Haultain(1) I might have had a better result in this case. The marked reduction of Haemoglobin compared with that in the number of the red cells is characteristic of puerperal septicaemia.

The next case is useful in comparison with the last for several reasons, chiefly the fact that the physical/

(1) Haultain. Edinburgh Medical Journal 1897. Vol.II.

physical symptoms in each case progressed to a fatal termination while the mental symptoms of the following case were more those of a typical acute delirious condition. It is difficult indeed to draw any distinction between the underlying mental symptoms in any of these toxic insanities and in most cases it is usually only a matter of degree. The following case has certain interesting points about it which make it advisable to quote it fully.

C.A.M. married, age 28, was admitted on 23rd April 1904. She is the third member of her family who has given birth to an anencephalous monster. Heredity predisposition to insanity was denied.. In her first pregnancy she miscarried at the 7th month. The second went to full term and there was great difficulty in detaching the placenta. Endometritis which had existed for some years gave her great trouble after this. During the present pregnancy she had a voracious appetite which she fed largely upon bread and tea. The present confinement was at the 8th month, an anencephalous monster. The labour was normal till after the child was born. Then there was considerable haemorrhage, the uterus remaining flabby and the placenta not coming away for 45 minutes. A portion of the membrane was undetached and to this the medical attendant attached

a/

a piece of tape. It came away on the 3rd day. On the 4th day the lochia were offensive and on the 5th the temperature went up to 100°. The mental excitement set in suddenly on the 7th day. Since the birth she had been sleepless, a little restless and difficult to deal with, but on the 7th day she began to talk a great deal and soon became quite excited. She began to wave her arms about addressing imaginary people in the ceiling. She struck and bit those who were attending on her, ordering them out of the house in an absurd and noisy manner. She refused all food. At times she would shout and scream loudly for hours at a time, occasionally singing snatches of hymns and nursery rhymes.

On admission she was excited and delirious. She kept throwing herself about in bed, chattering constantly, repeating verses of hymns, shouting to her husband, telling her sister to do things in the kitchen, mistaking the nurses and doctors for these relatives. Her physical condition seemed out of all proportion to the temperature of 101° and the duration of the excitement - seventh day -. Her lips and tongue were cracked and coated with thick white fur. The pulse was 105, fairly strong. The lochia were slight, greenish and not very offensive. During the following day she was so excited that she had to be kept/

kept in bed by two nurses all day. She paid absolutely no attention to anything, resisted every attempt to assist her and shouted out at the pitch of her voice most of the day. She seemed to have continual hallucinations. Her conversation was absolutely incoherent and often consisted of monosyllables, shouted out at intervals of a few seconds as if she were energeticallyreplying to hallucinations. At times however she would shout out a single word in an automatic manner for several minutes. She would sing for a little, then jump out of bed, strike herself against the bed and kick and tear at the nurses who restrained her. Her emotional condition did not change nor the wild expression of her face alter much whether she was singing a song or struggling to get away apparently from her hallucinations.

She passed no urine and had to be catheterized. Her temperature rose from 99.4° at 8 a.m. to 102° in the evening. For some days her mental condition was the same as on admission. She slept from 5 to 6 hours each night with 2 drachms of paraldehyde. She was tube fed every three hours with egg and milk peptonised. On the 3rd day the lochia became greenish yellow and more offensive but still very slight/

slight in quantity.

Her blood was examined on admission and following day. The red corpuscles were 3,750,000 the Haemoglobin 30 per cent and the white corpuscles 13,500. The vagina was douched repeatedly with corrosive sublimate solution. She had to have her urine drawn off every day. Five days after admission she was curetted. When the speculum was inserted it was found that greenish pus was escaping from the os externum, but no placental tissue was found. The whole surface of the uterus was scraped and irrigated with lysol. After the operation the patient came out of the chloroform to her former delirium. Next day the iodoform gauze plug was removed from the vagina and found to be inoffensive. She was given an intra-uterine douche at 112° and the vagina was replugged. Her temperature fell slightly for three days after the operation but then began to swing again from 100° to 99°. By the 4th May her mental condition was more serious than ever. She was very weak physically but in spite of this she kept throwing herself about when not controlled. She was quite delirious paying no attention to anything and having to be fed by the tube, have her urine drawn off and everything done for her. At times she would scream wildly for 15 minutes and then/

then begin to repeat hymns, songs etc., sometimes going through a description of her daily domestic duties in a disjointed incoherence.

On 5th May her blood examination shewed Red corpuscles 4,070,000, Haemoglobin 25 per cent and white corpuscles 9,062. On 6th May a small superficial abscess over the right breast was opened. The temperature continued about 101° in the evenings, the pulse 130.

There was no change till the 9th May when her mental condition became less excited but she remained quite confused and incoherent. A presystolic mitral murmur was diagnosed. She still continued to require tube feeding and in addition to eggs and milk was having whisky, while various preparations of Iron, Haemoglobin etc., were tried without much apparent effect.

On 12th May oedema of the left ankle developed. She was given 10 cc. antistreptococcic serum when the temperature was 103°. It had no immediate effect upon the temperature but a blood count shewed an increase of the leucocytes to 18,750. The Haemoglobin remained at 25 per cent, while the red corpuscles had fallen to 2,684,000. The oedema gradually spread over the whole leg. At this time/

time a slight yellow discharge again appeared at the os externum and intra-uterine douches of 1 in 500 carbolic were given. Next day she began to get noisy and talkative again and was soon back to the acute delirious condition prominent on her admission. Antistreptococcic serum was given every day, but it was discontinued on 18th May because the temperature rose after the injection and because the organism in the pus was found microscopically and by culture to be Staphylococcus pyogenes aureus. After the 19th May she became more excited than ever and it was with great difficulty that she could be fed. She had to be fed by the nasal tube and in order to ensure sufficient she had a feed at 2 a.m., in which she always had 2 drachms of paraldehyde which kept her asleep for 5 hours almost regularly. Without it she would have had no rest. By 19th May her Haemoglobin was 26 per cent, red corpuscles 3,040,000 and leucocytes 8.437. At this time she began to vomit her food and she had to be fed per rectum. The thrombosis now appeared in the opposite thigh. She was soon able to be tube fed again and as she was becoming very impulsive, jumping out of bed and occasionally trying to dash herself against the bed, she was given 30 grs. Strontium Bromide once a day. In spite of Liq. Ferri Perchloride and Liq. Arsenic Hyd. her Haemoglobin/

Haemoglobin continued to fall. On 26th May it was 20 per cent. The red corpuscles were 2,217,000, the leucocytes 8,750. Patient now began to assume a very yellow parchment like complexion and looked very exhausted. She was quieter for a few days but by 1st June she was very restless and resistive again. She took no notice now of anything but kept her legs flexed at the knees and hips and resisted every attempt to undo them, always putting them back in position when they were straightened out. On 2nd June her blood count shewed Haemoglobin 19 per cent. Red Corpuscles 1,650,000 and leucocytes 10,000. On staining a blood film with Jenner's fluid it shewed mixed streptococci and staphylococci. Her superficial abdominal veins were now felt to be thrombosed. By this time she was quite helpless and passing large quantities of urine involuntarily, still remaining in the same mental condition of delirium with resistance to all attention, striking out at the nurses and occasionally waving her arms wildly above her head for a few minutes. On 4th June 10 cc.' antistreptococcicserum were injected because of the presence of streptococci in the blood. It had its usual effect of raising the leucocytosis slightly but had no marked effect upon the/

the temperature. On the 8th June she became very much quieter and weaker, but was distinctly clearer mentally. What seemed to be a thrombosis of the external jugular vein appeared on that day and there was much oedema of the right side of the chest. For two days past also she had symptoms of pneumonia involving the right lung. From this time patient gradually became more exhausted. Her face became swollen and assumed a lemon yellow tint. The thrombosis spread to the axillary vein. On 10th June she talked quite sanely at short intervals and then rambled in her talk as formerly. She had morphia grs. $\frac{1}{4}$ injected for the pain in her neck. She was fed with the tube regularly till the end. Her right upper arm measured $11\frac{1}{2}$ inches as compared with $7\frac{3}{4}$ at the same point on the left. Her legs were both markedly swollen. She had an attack of dyspnoea at 4 a.m. on the 14th and died.

The following is an account of the bacteriological investigation in the case.

On 29th April patient was curetted. Only pus mixed with blood was removed from the uterus. No attempt was made to grow the organism but a film of fluid stained with Gentian Violet shewed the presence of staphylococcus aureus. On 8th May an abscess above/

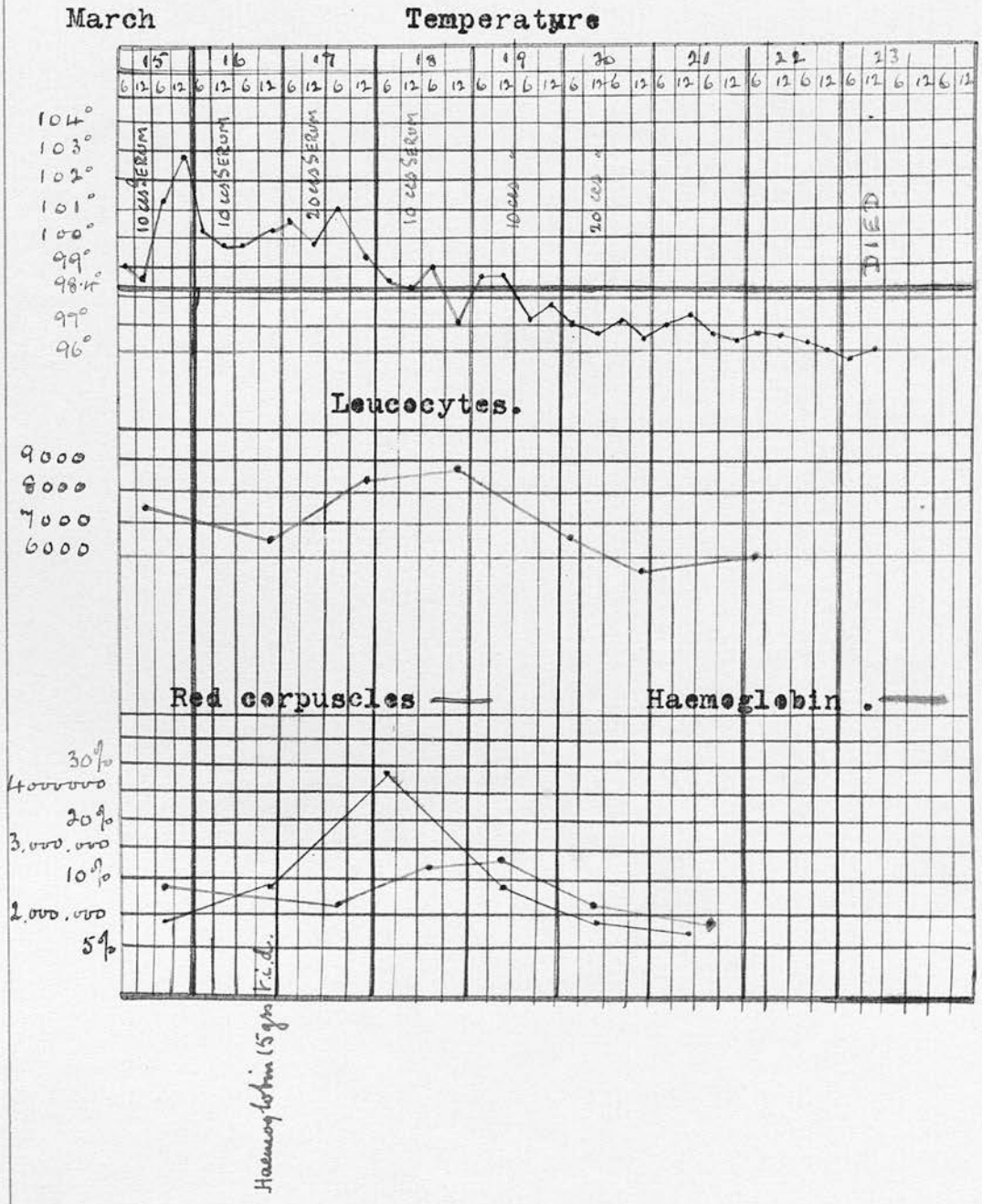
abscess above the right mamma was incised. Pus was smeared on agar and numerous separate colonies of staphylococcus aureus were found. On 10th May pus from the same abscess formed a stroke culture of staphylococcus aureus. Sub-cultures from this on agar produced a pure culture of staphylococcus aureus. On 26th May, after carefully sterilizing the skin, the lobe of the ear was punctured and a loopful of blood smeared upon agar. Two typical colonies of Staphylococcus Aureus formed within 24 hours and increased in size until the 5th day. The above growths were all confirmed microscopically by films. The presence of Streptococcus pyogenes aureus was not detected in any situation until 2nd June more than a month after the patient's admission. On that day it was discovered in blood films. Stained by Jenner's fluid the organism was again detected in films made from the blood on 6th 9th and 12th June, but owing to the tendency of the blood to clot it became increasingly difficult to demonstrate them. From 6th to 12th June repeated attempts were made to cultivate the organisms on other media, namely gelatine, potato, Koch's serum, and again on agar but these all failed to give any result. Bouillon became turbid on the addition/

addition of blood but no film was made from it. The patient died on 13th June so that the streptococcus was obtained from the blood 18 days before death.

In this case as in the previous the blood examination clearly demonstrated the progressive reduction of Haemoglobin and red corpuscles, the destruction of Haemoglobin being as before much more rapid than that of the red corpuscles. As regards the leucocytosis it occasionally rose above 10,000 but these occasions were always immediately after the injection of antistreptococcic serum, and it was usually about 8,000 to 9,000.

Two other cases that ended fatally presented similar features. In one case the patient was admitted about three weeks after the confinement. During most of that time she had been running a temperature and was excited at times from the second week. She was mildly delirious on admission. Her temperature which had been high began to fall and it fell gradually to normal as she became weaker and died in 6 days. Her red corpuscles were 2,750,000 Haemoglobin practically indeterminable and her leucocytes 7,200. Large doses of serum were tried but the patient's physical condition was hopeless from the beginning. In the other case the symptoms/

Case of Delirium with slight excitement admitted in the last stages of exhaustion (septicaemic)
The six-hourly chart shews the progressive fall in the temperature towards the end of these cases.



symptoms and progress were very similar to the case of C.A.M. above quoted but here the patient's leucocytosis was 30,000 on admission seven days after the confinement. Under the administration of serum this was kept up for 10 days but began to fall after that. The temperature which varied between 100° and 101.5° fell at the end of the third week and she got quieter mentally. It remained about normal for a week, the leucocytosis then being about 10,000.

Gradually the temperature rose again to 102° The mental symptoms passed off entirely and when the patient died she had been perfectly lucid for ten days. Streptococci were found in the blood 13 days before death. The progressive diminution of Haemoglobin and red cells was marked in this case also.

Although my leucocyte counts have been carried out in too few cases to base any conclusions regarding causation upon them, there are certain points that support the toxic theory. It is noteworthy however that in none of my cases did I ever get a leucocytosis in excess of 20,000. This is very low compared with the counts obtained in cases of acute mania with confusion by Bruce. When we take/

take into account the marked absence of a leucocytosis in the fatal septicaemic cases and the absence of any rise in the cases of melancholia with confusion we are met with two theories.

(1) That the leucocytosis of the excited cases is the result of psycho-motor activity, a theory upheld as regards mania by Fisher (1) or

(2) That the leucocytosis is an indication of toxaemia.

I consider that the latter theory is the most likely as regards my cases. The fall in the leucocytosis in the septicaemic cases indicates a great want of resistance to the toxaemia, evidenced by the fact that in spite of all treatment, wherever this low leucocytosis was present accompanied by high temperature and progressive anaemia the case had a fatal result.

I consider my examination of the blood interesting because of the demonstration in the blood in two cases, besides in the uterus in another case, of acute deliricus insanity of streptococci. These three cases had not the high temperature of the usual septic delirious mania (vide Charts of the cases) /

(1) Fisher quoted by Paton. Psychiatry p.346.

the cases) and from their prolonged duration, temperature, etc., were akin to the cases usually recognised as dying of acute deliricus mania. In these three cases the demonstration of streptococci although somewhat late in the disease brings them also into the category of septicaemias. The two cases which did not shew streptococci in the uterus were probably cases of tubal infection. These facts support Dr. Clouston's statement[1] that "the chief cause of death in puerperal cases that have been properly fed is septicaemia."

The following table shews the condition of the blood in one case of fatal delirious insanity and exemplifies what occurred in all.

Date	Treatment	Haemoglobin	Red Blood Corpuscles	Leucocytes
27th April		30 per cent	3,750,000	12,000
5th May	Bynohaemoglobin etc.	25 " "	4,070,000	9,060
12th May	"	25 " "	2,684,000	18,000 after serum
19th May	Lig. Ferri Perchlor 15 minims.t.i.d.	26 " "	3,000,000	8,200
26th May	" "	20 " "	2,500,000	13,400 after serum.
2nd June	As above with arsenic	15 " "	2,500,000	8,500
9th June	(died) " "	5 " "	2,170,000	8,750

The/

(1) Dr. Clouston. Loc. cit.

The blood changes as regards the haemoglobin and red cells in the four fatal cases examined correspond to what is found in ordinary puerperal septicaemia, another proof that these cases were septicaemic.

AETIOLOGY.

The question of the aetiology of puerperal insanity is an exceedingly intricate one. Most writers upon the subject, although agreed upon the main factors, differ greatly regarding the relative importance of the various causes. This is not to be wondered at in view of the fact that in spite of the comparative frequency of puerperal insanity it takes many years to collect a sufficient number of cases to found any reliable statements upon, and these cases differ so greatly as regards the form of insanity present and the apparent contributory causes that it is difficult, almost impossible, to arrive at any conclusion regarding the real exciting cause from a limited number.

One observer's group of cases may contain a large proportion with septic and feverish symptoms, or with difficult labours, haemorrhage and other sources of exhaustion, while another may have very few of these. Behr[1] emphasises this in a paper on aetiology in which he quotes the statistics of a number of German Observers. So different are these views that Knauer found 71 cases of idiopathic insanity, /

(1) Behr. Allgemeine Zeitschrift für psychiatrie October 1899.

insanity, 9 due to septic infection and 2 to other toxaemias, while Siegenthaler had 77.7 per cent of cases due to septic infection calculated however out of a total of only 27 cases. Hausen out of 49 cases had 42 per cent due to puerperal infection. Some statistics have been prepared by obstetricians and naturally one would expect their attention to be directed chiefly to cases which had for causation a gynecological condition proper. Alienists on the other hand have been more concerned with the psychical aspects of the cases and sometimes, from the acuteness of the mental symptoms, may have missed important underlying physical symptoms, while symptoms that the obstetrician would consider exciting causes have practically subsided before the cases came into the hands of the Asylum physician. To obtain an accurate account therefore of the factors in the causation must necessarily imply a close communication between the medical attendant at the childbed and the alienist who observes the further mental condition of the woman. I have in every case where there was the slightest chance of any circumstances in connection with the confinement being unknown to the friends, communicated with the medical attendant and have done so in nearly two thirds of the cases. Their/

Their replies giving in most cases a full account ..... of the labour, previous condition of the patient and puerperium as far as observed by them, were also of value in that a few cases established a neurotic tendency where such was not evident, and in some cases actually a strong hereditary history where such was denied by the patients' friends. The results obtained only serve to bring out the complexity of the causation.

In connecting the various theories one must take into consideration the fact that in many cases the results have been based upon statistics of insanity occurring in connection with childbearing as a whole. This tends to confusion, as causes which might act at a confinement even were it only as contributory factors could have no place during pregnancy. Tomlinson(1) in discussing the aetiology says that from a physical standpoint the history of the period is in most cases uneventful, the labour is as a rule normal, but on looking over the 60 cases tabulated by him and which include gestational, and lactational as well, one is struck by the fact that it is just in those cases which from their mode of onset conform to the generally accepted/

(1) Tomlinson. American Journal of Insanity July 1899.

accepted true puerperal cases, that the abnormal labours occurred. That normal labour in such cases is a relative question is evidenced by the fact that Kraepelin[1] gives as a typical example of puerperal delirium a case where the labour was obstetrically normal in which "the injury caused by the confinement which has taken place late in the life of the woman may be regarded as the real cause of the mental illness."

In studying the causation it might be useful to look at the conditions in the light of predisposing and exciting causes, but in view of our imperfect knowledge it is difficult in some cases to decide when a cause is predisposing or exciting. Take for example the anaemia which is so common an accompaniment of puerperal insanity. As a continuation of anaemia during pregnancy leading to exhaustion it may be considered a predisposing cause, whereas if due to severe post-partum haemorrhage it may be an actual exciting cause. The excessive gastro-intestinal derangement that is met with in many cases may be a direct cause of toxaemia, but in many cases also it is a secondary result of the disordered /

(1) Kraepelin. Loc. cit. P.135.

disordered nervous tone, and may be taken for a cause because it is so prominent by the time the patient comes under our notice. There is one factor in the causation which bears a greater or less relation to almost every case, that is hereditary predisposition. When we take into consideration the number of puerperal women who are subjected to some one or more of the various physical and mental shocks that are credited with a share in the causation of insanity, we must look for something more than a mere combination of exciting causes. It is now generally recognised that the various toxines which produce the acute insanities act by reason of their influence upon a more or less unstable nervous system. This instability may be very difficult to make out and in some cases it exists without any neurotic tendency being actually manifested in the near ancestry. The existence of insanity in one or both branches of the family is the usual antecedent of the neurotic diathesis although environment and other conditions may modify it. It is extremely difficult to obtain a complete history in all cases. In a pauper asylum some of the patients' friends have no ideas regarding their relatives, while many of them seem to have made up their minds at once and will assure/

assure you in haste, before they have been asked a single question, that there is no insanity in the family. Very often the appearance, manner and conversation of the relative are a better testimony to the neurotic tendency of the family than could be obtained by a score of questions. I have often been successful in obtaining information from the family doctor and such a fact, for example, that three members of a woman's family had given birth to anencephalous monsters, was only likely to be elicited from the physician.

Amongst the 42 cases there was a direct history of insanity in 23 or 55 per cent. Of these 23, 18 cases inherited a predisposition either directly from an insane mother or through the maternal side of the family, 4 cases inherited the tendency from the paternal side. In 2 cases a sister was insane. In two cases there was a neurotic inheritance from both sides of the family. Of the remaining 19 cases where no direct heredity was established, the following is the history. One woman, who gave birth to an anencephalous monster had in her family a record of two similar occurrences. In one case the family history was given as "very nervous" without any member being actually/

actually insane. In one case the patient's mother died of creeping paralysis at 52. In one case the father was a drunkard and died in middle life of apoplexy. These therefore might be added to the list of patients with a neurotic tendency. Of the others the history is variously classed as "uncertain" in which case "probably present" was the idea in the observer's mind, in five cases: "not ascertainable", in one case where not a single relative of an acute and fatal case ever appeared; and "none" in nine cases. All these facts point to a much greater proportion of cases of hereditary predisposition than is evidenced by the information obtained. Dr. Clouston[1] found a history of predisposition in 37 per cent, Behr[2] had only 25 per cent 41 per cent. Mc.Leod[3] out of 814 collected cases ^ but believes the estimate to be understated. Bianchi[4] says regarding his large group of sensory insanities in which he puts most cases of acute puerperal insanity "In every case I have been able to find evidence of hereditary predisposition." Dr. Clouston says that although the percentage ascertained in his cases is above the average ascertained/

(1) Dr. Clouston. Loc. cit. p.554.
(2) Behr. Loc. cit.
(3) Mc.Leod. British Medical Journal. Aug. 1886.
(4) Bianchi. Loc. cit. p.735.

ascertained heredity in all cases for a similar period, he believes heredity plays a much more important part, if the facts could have been accurately ascertained. After a careful scrutiny of my cases I find that out of 42, there are only 3 in which I was able to exclude with certainty any history of insanity in near relatives. Among the uncertain cases and those where a history was denied, there were several where nervousness and eccentricities of disposition were prominent in the patients' relatives. Sir J. Batty Tuke(1) pointed out that amongst his cases, a greater proportion inherited the predisposition from the maternal side, a point well supported by the proportion of 18 out of 23 ascertained cases. Some observers have looked to physical conditions in the ancestry for the origin of this nervous instability in their patients. Campbell Clark(2) mentions Uterine disease in the mother as an undoubted factor in the nervous formation of four cases. Tomlinson(3) takes into account an heredity of consumption in nine cases. Chronic alcoholism, epilepsy and allied conditions are generally looked upon as being as powerful in producing/

(1) Sir J. Batty Tuke. Loc. cit.
(2) Campbell Clark. Journal of Mental Science. July 1887.
(3) Tomlinson. Loc. cit.

producing nervous instability in the offspring as insanity itself, but when we come to look to consumption, Uterine cancer, etc., it seems to me that, in view of the prevalence of the former, we must, if we go back two generations only, so widen the area and so multiply the possible sources of the neurotic diathesis that we shall have no answer to give to the question why so many women go through the most exhausting complications of the puerperium without any mental alienation whatever.

The number of previous attacks was as follows:- One case of agitated melancholia had a similar attack at each of three previous confinements. One case of confusional excitement at the third confinement had been depressed for some days at the second. Another had been excited for a few days after a previous confinement but was treated at home. A case of slight melancholia with a condition of impulsive homicidal tendency had been excited after her first pregnancy, but had no mental symptoms after her second or third. Two cases had had several attacks of insanity at various periods and in each case one attack only coincided with a former puerperium. Amongst the primiparae one had been insane at adolescence while another was said to have had "brain fever" as a girl.

The/

The older writers laid chief stress upon the pregnant state with the associated metabolic changes. That the mental instability of women at child birth is greater than is evidenced by attacks of insanity is well recognised. Burrows (1) says "Gestation itself is a source of excitation in most women and sometimes provokes mental derangement and more especially in those with a hereditary predisposition." Jorg (2) believes that every pregnant woman is irresponsible, while Dofler (3) says that the mental condition of a pregnant woman exhibits at all times a more or less severe excitable condition of the brain and of her psychical activity. In an examination of the previous physical and mental condition of the patients I paid particular attention to the changes in temperament, etc., which would attract the attention of the patient's friends or medical attendant. These changes which might be looked upon as warnings of a possible outbreak of insanity, as a matter of fact failed to attract any great attention except where they actually amounted to depression or extreme irritability. In view of the statements regarding the susceptibility of the pregnant woman to mental instability it may be useful/

(1) Burrows. Commentaries on Insanity p.363.
(2) Jorg. Quoted by Sigwart. Archiv. fur. psychiatrie. 1906.
(3) Dofler. Quoted by Sigwart. loc. cit.

useful to point out that in one or two cases the disposition of the woman changed very much for the better. One woman who was of a nervous timid disposition, was said to be in better health mentally and physically during her pregnancy than she ever was. I have a case at present of post-puerperal excitement in a woman who is epileptic. She is extremely disagreeable and irritable always, but her husband says she is perfectly well when pregnant, bright, cheerful and having no fits, while when she is not pregnant her fits recur with great regularity at her menstrual periods. Usually however the opposite condition prevails but these facts shew the difficulty of connecting emotional states during pregnancy with puerperal insanity.

The poor health referred to by the husband was often found to be a condition of nervousness or listlessness. Amongst the 42 cases the changes in disposition during pregnancy may be grouped as follows:-

(1) Nervous women who were more than usually anxious and worried, without any real cause: five cases.

(2) Women who were worried by such causes as mal-treatment by the husband, difficulty in sustaining a large family: four cases.

(3) Irritable women who became more peevish or even suspicious/

suspicious: four cases.

(4) Irritable women who became calm and cheery during pregnancy, two cases.

(5) Women who had symptoms amounting to actual alienation: two cases.

Altogether 16 cases had, from causes without or within, such mental changes as might predispose to a further upset upon the accession of a suitable stimulus.

There are very few women who go through the period of pregnancy without some misgivings as to their condition. The strongest woman will have some concern, apart altogether from the reflex anxieties which arise in so many cases. The dread of confinement will of course be met with to a greater extent in primiparae who constitute a great percentage of the cases according to all authors. Amongst my 42 cases the large number of 21 or 50 per cent were primiparae. Amongst these are to be found the great majority of the very acute cases, those which developed soon after the confinement.

Table/

TABLE SHEWING NUMBER OF PREGNANCIES.

1st. pregnancy	21	50 per cent.
2nd. "	6	14.3 " "
3rd. "	5	11.9 " "
4th. "	5	11.9 " "
5th. "	2	4.7 " "
8th. "	1	2.4 " "
10th. "	1	2.4 " "
13th. "	1	2.4 " "

By comparing the hereditary predisposition along with the number of the pregnancy I find a similar result to what Behr points out namely, that in those cases where insanity first developes in a multipara the hereditary predispcsition is greater than in the case of primiparae.

Illegitimacy where it does affect the mental condition undoubtedly acts over a long period of months during which there is dread of the confinement. Esquirol (1) speaks of a "sort of frenzy incident to unfortunate girls on giving birth in misery and secrecy to bastard children, a condition of mind which is to be feared often prompts either infanticide or suicide." According to him cases of puerperal insanity in Paris shewed a proportion of one unmarried woman to three married/

(1) Esquirol. Quoted by Burrows. Loc.cit.

three married. Dr. Clouston[1] states that in 25 per cent of sixty cases the children were illegitimate, the average rate of illegitimacy in the district being one third of this.

Bevan Lewis[2] pointing out that illegitimacy is far more rife in Scotland than in the districts from which his cases were drawn, gives only 5 cases out of sixty six as illegitimate. Mc.Leod[3] had 95 out of 814 collected cases or 11.7 per cent. Amongst my own cases 5 or 11.9 per cent were cases of illegitimate births. The six counties from which these cases were drawn are chiefly agricultural but one of them contains large industrial centres. On reference to the Registrar General's tables for the past ten years I find that in these counties, the proportion of illegitimate births was 5.6 per cent. It is impossible to found any conclusion upon such a small number of cases except that this is another of the causes that bring about a state of mental instability. It may be noted however that illegitimacy in some cases acts not so much as a moral cause as indirectly through physical causes. The secrecy attending illegitimate births leads often to/

(1) Dr. Clouston. Loc.cit.
(2) Bevan Lewis. Loc.cit.
(3) Mc.Leod. Loc.cit.

to neglect and misery. Working hard for a living probably during pregnancy, without preparation for the confinement either as to comforts or medical attention, it is small wonder if many of these cases amid dirt and neglect develop sepsis. Of my five cases, two were septicaemic. Again it must be borne in mind that illegitimacy very often occurs in just those weak-minded women who have already a predisposition to insanity. Two of my five cases were girls one or other of whose parents was insane, they themselves were weak-minded, were living in each case with the father of the child and were not in any way disturbed by the occurrence of a birth. Another cause that may give rise to apprehension during pregnancy is the occurrence of insanity or of physical illness in connection with a previous confinement. Amongst my cases 5 women had previously been so affected mentally.

The mental habit which is acquired or modified during pregnancy has probably a considerable share in the predisposing causation. How much of it may be due to the underlying neurotic tendency, which makes itself more apparent from some loss of inhibitory power, some defect in self control which is common in some degree to most pregnant women, it is/

is difficult to say. Diminished power of inhibition was very apparent in the unusually passionate temperament that developed during pregnancy in two cases. Two cases gave way to drink to an unusual extent, while one woman indulged a ravenous appetite to an extent which her husband thought was insane. In the two cases where actual mental depression occurred during pregnancy it may be mentioned that both cases became wildly excited at the 8th day and both had symptoms of sepsis.

The question of physical predisposing causes is one in which again much help can be got from the medical attendant. Here we come to a subject which includes much around which the causation of the older writers was grouped, namely the physiological changes of pregnancy, which in a predisposed person may bring about pathological results. It is a well recognised fact however that the number of cases of insanity occurring during pregnancy is comparatively trifling compared with those that occur after labour, and so it is usually only those changes that occur soon after labour, such as secretion of milk and the beginning of Uterine involution, that were associated with the causation of puerperal insanity.

As regards the general health of the patients I find/

I find that only 17 out of 42 cases were in fair physical health throughout pregnancy. Amongst these however were many who had mental worries. Amongst the abnormal physical conditions during pregnancy a foremost place must be given to sleeplessness. In six cases there was a history of interference with sleep to an unusual extent especially towards the end of pregnancy. In all these cases it called for the special attention of the doctor. There were several other cases in which the history, though indefinite, suggested some considerable loss of sleep at times. The actual illnesses so far as could be made out were

(1) Flooding at the 7th month; another case at the 3rd month.

(2) Severe influenza and bronchitis a week before confinement.

(3) Attack of peritonitis at the 2nd month.

(4) Poor nutrition due to working hard to support a family in four cases.

(5) Many cases of anaemia and constipation. The poor health which was said to be present during pregnancy was in many cases traceable to a neglected constipation.

These seem to be the most common causes that/

that may be looked upon as purely predisposing. Some of them such as anaemia from haemorrhage, sleeplessness and mental worry may occur in the puerperium as exciting causes.

The age of the patient is of importance especially in connection with the question of exhaustion, the strain being usually considered as particularly severe in first confinements after the age of 30.

TABLE OF AGES.

Ages.	Number of cases.
20 to 24.	11 or 26.2 per cent.
25 to 29.	13 " 30.9 " "
30 to 34.	9 " 21.2 " "
35 to 39.	3 " 7.1 " "
40 to 50.	6 " 14.3 " "

It is interesting to note the ages of the 21 primiparae.

Ages.	Number of cases.
20 to 25.	9 or 42.9 per cent.
25 to 30	5 or 23.8 " "
over 30	7 or 33.3 " "

Seven/

Seven of the total number of 42 cases were at the late age of 30 or upwards at the time of the first confinement.

The labour itself is credited with a varying share in the causation. "The shock or strain alone probably never produces insanity apart from the presence of other predisposing causes "(Tomlinson)[1] If the shock however is prolonged so as to cause exhaustion we may have delirium arising without any other apparent cause, as evidenced by the case of acute delirium already reported where the labour was protracted to two days. As already pointed out it may be difficult to determine what part the strain of the labour does play as exhaustion may be a relative question in a neurotic person, and in cases where the insanity of collapse does not appear for several days it may be put down entirely to some intervening condition. I find that in 15 out of 42 cases the labour was not normal. Amongst these were five cases of protracted labour specially mentioned as regards the delay by the medical attendant. Instrumental labours took place in 9 cases but four of them were cases of only slight delay and were classed by the doctor as perfectly normal.

Chloroform has been mentioned as a possible cause.

(1) Tomlinson. Loc.cit.

Sir J. Batty Tuke[1] says the number of chloroform cases amongst his was so small as to give the strongest denial to any absurd theory regarding the danger of its exhibition. I have gone over the records of the Edinburgh Maternity Hospital for a period of ten years, and amongst the exceedingly large number of complicated labours conducted there the insignificant number of cases of excitement seems to indicate that chloroform has no part in the causation of insanity. I have at present a patient suffering from Climacteric insanity who had two previous attacks of insanity at the puerperium. At these two confinements she had no chloroform. In two out of her three confinements subsequent to the others she had Chloroform and instruments. Professor Simpson[2] says "the ordinary maniacal excitement of labour is becoming more uncommon through the use of Chloroform."

In nine cases there was post-partum haemorrhage calling for notice, varying from the excess consequent upon a prolonged abortion to great loss in a case conducted by an unqualified nurse where a doctor had to be summoned to remove the placenta and to stop the haemorrhage. In one case a piece of membrane/

(1) Sir John Batty Tuke. Loc.cit.
(2) Professor Sir A. R. Simpson. Lectures on Midwifery.

membrane was retained for three days and was the origin of fatal septicaemia.

Loss of sleep after the confinement may be a predisposing cause or may itself be the first manifestation of the oncoming of the mental symptoms. In all the cases where the attack came on soon after the confinement and where there was evidence of exhaustion, there was a history of sleeplessness, in one case amounting to loss of sleep for six days. In two cases the knowledge that the child was still born may have had something to do with starting the attack and particularly in one case where there was a marked condition of exhaustion during pregnancy.

The further consideration of the causation involves us in the question of toxaemia.

The first source of toxaemia that may be considered is that which may arise from the physiological process of the early puerperium. Sauvages(1) ascribed the mania lactea to a milky deposit on the brain transferred from the breasts! Burrows says "in a majority of cases puerperal delirium comes on with the milk fever especially when from any accident the supply of it is not disposed of as fast as possible." In about 60 per cent/

(1) Sauvages. quoted by Burrows.

cent of my cases the secretion of milk was arrested. The arrest of the lochia has been looked upon as a causal toxaemia. Bevan Lewis (1) says that the products of disintegration of the Uterine muscle found copiously in the lochia and caseous elements of the early mammary secretion, will, if these secretory and excretory functions be arrested, lead up to the evils now alluded to. Of 19 cases admitted within a fortnight of the puerperium the lochia were normal in amount and inoffensive in four cases, arrested in three, slightly arrested and inoffensive in three, present and slightly offensive in eight and very highly offensive in one. The lochial discharge, according to Professor Simpson (2) is frequently completely or partially arrested about the 3rd day in cases apart from insanity, so that its diminution in six cases cannot be definitely associated with the causation except in two cases where the arrest of the lochia preceded the onset of septicaemia which seemed to be the real cause of the insanity.

Sir James Simpson (3) and others have drawn attention to the presence of albuminuria in the early stages/

(1) Bevan Lewis. Loc. cit. p.402.
(2) Professor Sir A.R.Simpson. Loc.cit.
(3) Sir James T. Simpson. Vol. III. of Collected Works.

stages of puerperal insanity. Sir J. Batty Tuke[1] found albumin in only 3 cases out of 73. Campbell Clark[2] found it in 9 out of 23, in most cases only a faint trace. It may be that many of the cases that come to the Asylum with normal urine have had albumin in the early days of the puerperium. I have a record of only five cases in which the patient's urine was tested by the medical attendant at the confinement when the mental symptoms first appeared and in none of them, all acutely excited cases, was there any albumin.

After admission every patient's urine was carefully and regularly examined. In six cases there was albuminuria on admission. It two it was afterwards proved beyond a doubt to be due to contamination of the sample with the lochia. In one case the patient had remittent attacks of slight albuminuria during convalescence even, and on re-admission a few years later suffering from insanity apart from the puerperium she still had the same occasional condition. One case suffering from melancholia had a trace of albumin in the urine on admission three weeks after the confinement and it soon passed off. Albumin was present in some distinct/

(1) Sir J. Batty Tuke. Loc.cit.
(2) Campbell Clark. Loc. cit.

distinct amount in two cases of insanity developing after eclampsia, already quoted. The relation of eclampsia to the pregnant and puerperal states is of great interest in view of the toxaemic character of so many of the cases of puerperal insanity.

Fothergill[1] in describing a case of melancholia following eclampsia initiated a discussion in which many suggestive remarks upon toxaemia in parturition were brought out. After mentioning that Thyroid substance in 5 gr. doses had along with anti-toxaemic methods cured his patient, he says "I have been teaching since the year 1900 that the poison is the same or nearly the same in eclampsia, in the melancholia, the mania , amblyopia and polyneuritis of pregnant and puerperal women." Nicholson[2] has used Thyroid gland with good effect in depression associated with threatening eclampsia towards the end of pregnancy. The relation of the thyroid gland to the sexual function in women is well recognised. In women it only developes to its full extent after menstruation is established and it continues to functionate till the period of the Climacteric,/

(1) Fothergill. Edinburgh Obstetrical Transactions 1905-06 p.80.
(2) Nicholson. Edinburgh Obstetrical Transactions 1905-06 p.87.

Climacteric, after which it gradually atrophies. Nicholson states that there is abundant evidence to shew that the metabolic and antitoxic functions of the thyroid and parathyroid glands is often unduly taxed during pregnancy. This insufficiency in the functions of these glands may have something to do with the causation of the toxaemias which appear to precipitate such urgent mental symptoms in the early days of the puerperium. Bruce (1) has frequently seen enlargement of the thyroid in puerperal, lactational and climacteric cases, and thinks it probable that this enlargement corresponds to increased functional activity at those periods. I have two cases of climacteric insanity at present both of whom had previous attacks at a confinement. In both cases there was on admission a distinct enlargement of the thyroid which the friends said gave a fulness of the neck, that had only been noticed recently. I have a note of slight enlargement of the thyroid in two puerperal cases only, and these were cases that had several attacks of insanity at times quite apart from child bearing. Amongst the many stuporose and slowly recovering cases that have been treated to recovery by the administration of/

(1) Bruce. loc. cit. p.239.

of Thyroid, a very large number are puerperal cases that had progressed very slowly after the acute symptoms had passed off. The enlargement of the thyroid noted by Bruce may be the method adopted by the bodily economy to counteract toxaemias. If that were so we should be tempted to administer thyroid extract in the acute stages of the disease, yet it has always been a definite principle of the thyroid treatment of insanity that the gland should not be administered in excited states. Fothergill's case of melancholia from the symptoms he mentions, refusal of food, muttering and unintelligible speech, followed by stupor, with one or two attacks of restlessness is like a confusional state following the eclampsia. The stuporose states that follow acute excitement are, as pointed out by Bruce the most suitable for thyroid treatment, and we may in the above case reasonably take the eclampsia as an equivalent of acute mania in producing confusion, but there is still the question whether thyroid in such cases is a direct brain stimulant or an antitoxic substance. In view of the fact that so many cases of exhaustion in puerperal insanity have an impaired resistance as indicated by an examination of the leucocytes, I should not care to give thyroid gland soon in any case when, as Bruce says,/

says, "thyroid gland always reduces the leucocytosis in whatever form of mental disease it is administered."

Much attention has been directed lately by Ford Robertson and others to the intestinal tract as a source of toxaemia in acute insanities in the predisposed. Bruce's observation and particularly his methods of treatment of the alimentary tract indicate that where there is not a uterine sepsis the toxaemic cause of his "Mania with confusion" is from the alimentary tract. The presence of indican in the Urine of certain cases as an indication of intestinal toxaemia has received considerable attention since Townsend (1) described its relation to melancholia. Bruce (2) says the most marked indoxyl reactions are met with in states of metabolic toxaemia, chiefly acute melancholia, but it also occurs in states of acute excitement. Baugh (3) has found indoxyl in excess in all puerperal cases where there was confusion. I have only tested the urine for indican in the last seven cases I have had under my care. Two of these were cases of acute excitement and indican was present/

(1) Townsend. Journal of Mental Science. January 1905 p.51
(2) Bruce. Loc. cit. p.223.
(3) Baugh. British Medical Journal October 14th 1905.

present in slight excess for a few days while the temperature was elevated, after which it fell to a normal amount long before the mental symptoms had subsided. The other five cases were melancholias, two of them with a certain degree of confusion and stupor, the others with agitation and confusion. There was excess in all these cases but it passed off gradually, usually after the constipation had been attended to for some time.

Easterbrook (1) believes that in melancholia, indoxyluria is a sequel to the mental disease which in itself tends to constipation from accompanying passivity of the visceral musculature, and adds, after an exhaustive criticism regarding the presence of indican in many conditions, "indoxyl itself as formed in the gut is not regarded by physiologists as far as I am aware, as a toxic substance." He advises an examination of the ethereal sulphates of urine as a more reliable indication of the possible toxic significance of the bacterial putrefaction of proteids normally occurring in the intestine.

There is no question as to the derangement of the alimentary tract in puerperal cases. Constipation was far more constant during the pregnancy than at any/

(1) Easterbrook. Journal of Mental Science. Oct.1906.

any time after the confinement when active measures were usually taken to ensure evacuation. It is extraordinary however to note in some cases how much accumulated faeces were expelled with repeated purgation and enemata for weeks after the patient was admitted. The condition of the alimentary tract in 42 cases, dividing the cases up into those that came in acutely excited in the early days of the puerperium and those that came in later, shews that constipation was present in about 50 per cent of each group. In three cases of early onset with temperature disturbances there was a copious diarrhoea. Disorders of the mouth and tongue indicated by thick fur, sordes etc., were present in almost all the acutely excited cases, while the state of the mouth did not call for much attention in the later admissions. Refusal of food was present in 60 per cent of the cases, usually a few days only, but in two cases continuing for nearly three weeks, and in one case that died for the greater part of six weeks.

Hepatic disturbance was manifest in many cases in the quantities of bile stained water which were removed in lavage of the stomach employed in all cases of refusal of food as well as in others. In determining whether the gastro-intestinal changes are causal or consequent I was struck by the fact that/

that the most intense derangement of the tract occurred in the two cases following eclampsia, where the disorder of the tongue, bowels and stomach was out of all proportion to that met with in any of the other cases however acute. I have recently had under my care a young and very strong attendant of a distinctly neurotic diathesis who had a severe shock to his nervous system by having his legs crushed between a running waggon and a platform for some minutes. Twenty four hours after his accident his tongue was coated with fur to an extraordinary degree and his gastric apparatus was so upset that he absolutely refused food. He lost sleep for two days and then his temperature began to go up, but with repeated doses of Salol soon came down to normal. His bowels were attended to but they were not constipated. The gastric disturbance was intense and remained abnormal for a week. In most cases of puerperal excitement due to rapidly acting causes I believe it will be found that the gastro-intestinal derangement was subsequent to the first onset of the mental symptoms. In many cases it may lend an additional source of toxaemia, and I had two cases in which a marked amelioration of the symptoms immediately followed after a thorough evacuation of/

of the bowels. In these cases the intestinal toxaemia probably added fresh fuel to the fire, but from the history it could most certainly be excluded as the primary cause.

The anaemia which is found in so many cases of puerperal insanity cannot in all cases be put down to loss of blood at the confinement. It is of interest in this connection to note the great diminution in the amount of Haemoglobin in the blood of cases of puerperal insanity apart altogether from the septicaemic cases in which it is very marked and progressive. This diminution which I shall refer to in dealing with the examination of the blood, was in most cases a chlorosis. While a sign of the exhaustion which to a certain extent underlies every case, this diminution also suggests an intestinal toxaemia being at work causing the chlorosis, which Sir Andrew Clark[1] affirmed is due to the absorption of poisons from the large bowel the result of constipation. In grave septicaemia apart from mental symptoms there is however also a progressive diminution in the Haemoglobin.

The source of toxaemia which is of most importance is the genital tract. Macpherson[2] describes/

(1) Quoted by Osler. Principles and practice of Medicine. p.723.
(2) Macpherson. Loc. cit.

describes as "septic puerperal mania" a special group of mental symptoms. "The symptoms are of a kind analagous to those set up by other forms of infection such as poisoned wounds, virulent infectious diseases." Paton[1] recognises the relation between the delirium of infectious fevers, the acute delirium of collapse and the subacute states of confusion in a group of forms of insanity "which are probably in part the result of auto-intoxication." In determining the part which uterine sepsis plays in the causation of insanity, we must remember what is pointed out by Savage[2] and others that neurotic patients are specially liable to septic influences. Not only does a neurotic diathesis imply a diminished resistance to the effects of a septic toxaemia, but it also probably implies a condition in which sepsis may more readily originate. Campbell Clark[3] found on investigation that out of 354 cases of puerperal pyrexia 65 cases or 18.3 per cent had unfavourable mental antecedents in the shape of previous insanity, emotional excitement, mental shock, etc. The relation/

(1) Paton Psychiatry. p. 254.
(2) Savage Dictionary of psychological medicine p.1038.
(3) Campbell Clark. Journal of Mental science. July 1887.

relation of the time of onset of the mental symptoms to that of the physical signs indicating sepsis is of the greatest importance. It is a common opinion stated by Macpherson (1) that cases which occur within the first four or five days after labour are almost invariably septic in origin.

Amongst my 42 cases I had 19 or 45.2 per cent which on admission had symptoms that suggested a connection in some way with the presence of sepsis. Amongst these one or two require special discrimination. One case had been depressed and listless from the confinement till the 4th week when she had to remove her house. In a few days afterwards she was delirious. On admission she was in a condition of acute confusional excitement with hallucinations, illusions of identity etc. She had an acute follicular tonsillitis, a temperature of 101°. She died of exhaustion in 4 days. A post-mortem revealed double sided otitis media which had not shewn externally. Another case with a temperature of 100.6° due again to septic tonsillitis had been restless, sleepless and mildly confused with loss of memory for five months, from the 10th day after labour. Then she became delirious and being sent/

(1) Macpherson. loc. cit. p. 240.

sent to the Asylum died in 14 days of meningitis. The puerperium in both cases was the starting point of the mental breakdown, though the acute insanity did not appear till five months afterwards in one case, and may possibly have had no connection with the puerperium other than that the predisposing exhaustion had dated from that time. That a tonsillitis in both cases should usher in such excessive delirium as characterised the cases, such rapid exhaustion and fatal termination points to a very great diminution in the resistive power of the patients. Both cases had a history of rigors at the onset of the acute symptoms. One case, the first described in this paper, where the symptoms although appearing as late as the 14th day were undoubtedly symptoms of collapse delirium, had when admitted a normal temperature and no evidence of sepsis, but later she developed a mammary abscess and her temperature was elevated for three days. Its development made no difference on her already existing mental symptoms. Savage[1] points out that in some cases mental symptoms may be relieved by the occurrence of some localised septic complication. This may be/

(1) Savage Loc.cit.

be the result of a leucocytosis induced by the septic complications. Bruce[1] in order to produce a leucocytosis in cases of acute mania has produced sterile abscesses by the injection of turpentine. Two days after the discharge ceased the confusional element in the above mentioned case seemed to lessen and leave her condition more of a purely maniacal one, her hallucinations not again recurring. In another case ten days after the patient's admission in a wildly excited state without any elevation of temperature or symptoms of uterine sepsis, a mammary abscess appeared. In this case the abscess was slight and had no effect upon the mental condition in any way. Taking next the cases where the symptoms of sepsis lasted only for a few days, in one case the patient's symptoms began with depression on the 3rd day, with the addition of terrifying hallucinations in two days. There was no elevation of temperature but a slightly offensive vaginal discharge which passed away under doucheing in three days. The mental symptoms did not pass off for 12 months.

In three cases the mental symptoms preceded the elevation of temperature and the appearance of offensive lochia by two or three days, the temperature/

(1) Bruce. Loc. cit. p.131.

temperature subsiding and the lochia clearing up under local treatment. In all these cases though the temperature was 100° to 102° the pulse did not in any case rise above 97. In these cases the septic infection probably played a contributory part though in all of them there were other causes of sufficient importance to bring about the mental attack.

In nine cases by far the greater share in causation must be attributed to septic infection. A constant feature in them all was that the temperature was elevated some days before the mental symptoms appeared. Another was that while the temperature on admission varied from 100° to 102.6°, the pulse rate in every case was 110 or over. In two cases the temperature rose on the 7th day, in one on the 6th. Two days afterwards the mental symptoms appeared. In one case they passed off in two days the woman continuing to go through a puerperal septicaemia. Her case is described under the serum treatment. In the other two cases the medical attendant noted a fact which also came out as regards two of the fatal cases, namely that under the influence of vaginal doucheing the elevated temperature fell to normal in about two days at first and the mental symptoms appeared on/

on its subsidence. Both cases had temperatures of over 100°, rapid and feeble pulse, offensive lochia, while the mental symptoms were those of acute delirium. Both temperatures continued to rise slowly but steadily, falling under serum treatment to normal in four or five days. In both the lochia continued offensive for a week. Later on both had abscesses of the breast and one a recurring crop of small abscesses on the buttocks. They recovered one in 6 months, one in 8.

There were five fatal cases and I think in each of them the cause of death and the mental symptoms was septicaemia without a doubt.

The great difficulty with regard to causation is to arrive at a definite idea of the relative importance of the various factors which are at work. Because there is a distinct neurotic tendency in a case it does not necessarily follow that the insanity is wholly idiopathic. It may still be reasonably called a toxic insanity, if a mild septic process is sufficient to disturb the function of unstable nerve centres that only require a very slight irritant. In some cases, such as the grave delirious cases I have described, the greater share in the causation seems to be the septic infection and here the nervous instability/

instability may have been such as to resist all but a strong toxaemia. Similarly with exhaustion and other causes.

The one definite feature of the cases seems to be the presence of this neurotic tendency. The whole stress should not however be laid upon the cerebral potentiality as Tomlinson[1] calls it. The causation in most cases is probably a complex one and even the septic cases may be modified by other existing circumstances. The pathology of some of the apparently non-septic cases suggests a toxic origin, and I believe many more are septic cases than is evidenced by physical symptoms.

When we reduce the question to one of pathology there are three main theories around which the causation has been grouped:-

(1) That the disease is due to a chemical instability of the nerve centres. This instability may bring about abnormal functioning under the influence of some stimulus which may be mental, physical or a combination. Easterbrook[2] in adhering to this theory states that the toxines which have been found in the developmental neuroses are an expression not the cause of the morbid chemical activity of the higher/

(1) Tomlinson. Loc. cit.
(2) Easterbrook. Journal of Mental Science. January 1900.

higher neurons.

(2) That alterations in the blood supply to the brain produce nutritional changes in the nerve cells. This is the theory advanced by many of the older writers who indicated that hyperaemia induced excitement and anaemia induced depression. Nutritional changes in the cells is also looked upon by some as the underlying condition in insanity produced by exhaustion.

(3) That toxic products of disordered metabolism and toxines produced by micro-organisms which may be introduced at parturition or being normally present in the body take on a powerful action in virtue of diminished resistance from exhausted states etc. circulate in the blood and affect the functions of the nerve centres. This is the theory of Kraepelin, Paton, Bruce and many others.

There seems nothing to prevent all of these conditions appearing in one case, and the only difficulty is that some observers seem to lay the whole stress upon one condition. The similarity in the symptoms in so many of the acutely excited cases with different exciting causes seems to indicate that not only is the condition a toxic one but/

but that the chemical instability is present in all and is disturbed by different toxines. The fact that in many of the septic cases the mental symptoms persist after the temperature and physical symptoms have subsided cannot be taken as destroying the theory that the initial disturbance was the result of a septic toxaemia. It may be taken to indicate that in virtue of their instability the higher neurons have taken longer to right themselves than the somatic functions.

In view of the apparently complex nature of the causation, I have prepared the following table shewing the various factors in each case.

No.	Age.	M. or S.	No. of Preg.	Heredity	Previous Attacks.	Previous Condition	Labour.	Mode of Onset.	Mental condition on admission.	Physical condition.	Course and Termination.
1.	24	S.	1.	None	None	Had to give up situation on account of pregnancy Poorly fed and constipated.	Excessive post-partum Haemorrhage.	At 8th day began to wander in conversation. Illusions of identity and distressing auditory hallucinations.	Very excited. Laughing and crying by turns. Bites and scratches Resistive and refusing food.	Pulse 130. Temperature 101° No discharge till 15th day.	Mental symptoms subsided in two days. Temperature high for six weeks. Treated by anti-streptococccic serum. Recovery in four months.
2.	20	M.	1	Maternal aunt insane.	None	Depressed 4 weeks before confinement on occasions. Talked of drowning herself.	No qualified atttention Labour delayed and badly conducted.	At 8th day became rapidly delirious and tried to jump over the window.	Answers simple questions, but talks incessantly and incoherently. Talk chiefly religious. Mildly excited.	Foetid discharge from Vagina. Pulse 99. Temperature 102°	Rambling & talkative for many weeks with sane intervals. After two months agitated and depressed. Recovery in 10 months.
3.	41	M.	4	Mother insane	One at each of three previous confinements.	Nervous timid woman. Always in best health while carrying the child.	Normal.	Baby died at 3rd. week. She was sleepless and by 4th week had delusions of unworthiness.	Agitated and depressed. Mental and motor resistance. Repeating depressed phrases.	Pulse regular 62. Temperature normal.	Agitated melancholia Mild dementia and symptoms of chronic toxaemia remain after two years.
4.	46	M.	2	Uncertain	None	Very nervous and excitable, especially during the pregnancy. Lost her sleep at times.	Normal. Child was still born.	10 days after the confinement she became restless and sleepless with loss of memory.	Became more restless and excited till in five months she was delirious and was sent to asylum.	Temperature 100°.6 due to tonsillitis.	Occasional outbursts of delirium with quiet periods. Died 14 days after admission from meningitis.

No.	Age.	M. or S.	No. of Preg.	Heredity.	Previous Attacks.	Previous Condition	Labour.	Mode of onset.	Mental condition on admission.	Physical Condition.	Course and Termination.
5.	20	M.	4.	Father insane.	None	two abortions and one still born child at previous pregnancies. In poor health and badly fed. Sleepless for many weeks.	Midwife in attendance. Doctor summoned to remove placenta. Severe Haemorrhage.	Temperature rose on 7th day. On 9th day became confused, laughing and crying and incoherent.	Confused and mildly deliricus.	Pulse 120. Temperature 101.2° Lochia offensive.	Anti-streptococcic serum reduced temperature in six days. Recovery in 3 months.
6.	34.	M.	10.	Very nervous family. Highly strung woman.	None	Fairly healthy.	Moderate post-partum Haemorrhage	14 days after confinement she had removed her house, became sleepless with the worry, then depressed and cut her throat.	Depressed and suicidal, attempting to choke herself with bandages.	Suppurating wound in throat.	Erysipelas developed in the wound and she died on 6th day.
7.	43.	M.	4.	Maternal aunt insane Mother rheumatic.	None	Average health.	Abortion at 4th month. No great difficulty.	At 3rd. week became morose and forgetful.	Absurdly childish in manner and speech. Katatonic excitement in 6 weeks after.	Healthy	Dementia.
8.	36	M.	1.	Mother died of creeping paralysis at 56.	None	Average health.	Normal.	Ten days after confinement she had severe Influenza, and became depressed	Confused and depressed. Talks incoherently and hears people outside speaking to her.	Great loss of weight since confinement.	Passed through period of great depression with terrifying hallucinations and recovered in three months.

No.	Age.	M. or S.	No. of Preg.	Heredity.	Previous attacks.	Previous condition	Labour.	Mode of Onset.	Mental Condition on admission.	Physical Condition	Termination.
9.	40	M.	13.	None	None	Severe influenza and bronchitis a week before her confinement.	Labour delayed. still-born child.	At 3rd day became excited throwing dishes about and talking to imaginary people.	Restless and delirious.	Lochia arrested. Temperature 100.1° Pulse 97.	Delirium passed off leaving her depressed in the mornings. Recovery in two months.
10.	32.	M.	1.	Paternal grandfather insane. Mother highly neurotic.	None	Always been a very quick-tempered, suspicious woman. Good health.	Normal.	Three weeks after confinement developed delusions of persecution. Accused her husband of poisoning her.	Slightly depressed. Believes her husband is conspiring with others to kill her.	Healthy.	No change after three years.
11.	27.	M.	3.	Several of mother's relatives were insane	None	In very poor health during pregnancy. Very anaemic. Anxious, worried and sleepless.	Very ill and collapsed during labour. Considerable Haemorrhage.	14 days after confinement became depressed. Made attempts to destroy herself.	Profound depression.	Temperature normal. Very marked anaemia.	Recovery in six months.
12.	26.	M.	3.	Uncertain	Depressed and listless for some weeks after 2nd confinement	Became moody and restless towards the end of present pregnancy. Sleepless.	Normal.	Depression increased after confinement; at 9th day she became delirious, barking like a dog and refusing food.	Very confused and excited. Keeps on barking and biting like a dog.	Lochia slightly offensive. Temperature 100° Pulse 112. Abscess in breast.	Recovery in six months after a period of confusion.
13.	30	M.	3.	Father insane.	None	Haemorrhage at 7th month.	At 7⅓ months severe haemorrhage. Child died.	At 14th day became restless and suspicious.	At 3rd week she was noisy, violent, shouting incessant and incoherent nonsense.	Very anaemic.	After period of mental confusion with occasional exacerbations of excitement. She recovered in 10 months.

No.	Age.	M. or S.	No. of Preg.	Heredity.	Previous attacks.	Previous Condition	Labour.	Mode of Onset.	Mental Condition on admission.	Physical Condition.	Termination.
14.	27.	M.	1	None	None	Fairly healthy. Irritable.	Six Eclampsic seizures soon after delivery.	Three weeks after confinement she became excessively talkative and suddenly developed hallucinations of sight.	Hallucinations of sight, seeing rats and other animals. Mistakes identities	Temperature 98.6° Great derangement of alimentary tract. Albumin in urine.	Recovery in two weeks.
15.	34.	M.	1.	None	None	Healthy	Normal	Three days after confinement she became delusional talking nonsense with apparently sane intervals.	Very delusional. Hears her neighbours talking about her and scolds them.	Healthy. Lochia slight.	After 4 years remains a noisy dement, knocking on the walls to people who annoy her by their talk.
16.	25.	M.	1.	Maternal aunt insane.	None	Healthy	Normal	At 6th day became excited after losing sleep for six days.	Acutely delirious. Hallucinations of sight and hearing.	Temperature 102° Slight Lochial discharge, quite inoffensive.	Died in six days of acute Septicaemia.
17.	29.	M.	1.	Maternal aunt insane.	None	Healthy	Delayed. Forceps. Ruptured Perinaeum.	Temperature rose to 101° on 3rd day. With its return to normal on 5th day she became excitable and strange.	Acutely delirious. Waving her arms about, continuously biting.	Temperature 101.6° Pulse 120. Lochia very highly offensive. Abscesses later of breast and buttocks.	Recovery in 8 months after period of mental confusion.

No.	Age.	M. or S.	No. of Preg.	Heredity.	Previous attacks.	Previous Condition	Labour.	Mode of Onset.	Mental Condition on admission.	Physical Condition.	Termination.
18.	25.	M.	1.	None	None	Normal	Normal.	Three weeks after the confinement she became restless and confused in thought.	Mild confusion and depression.	Temperature 100° Abscess of breast.	Restless, impulsive with attacks of depression and fear. Recovery in 7 months.
19.	20.	S.	1.	Uncertain	None	Healthy	Eclampsic seizures on 3rd day.	4 days after recovering from fits she became acutely excited.	Vivid hallucinations of sight, of a terrifying nature.	Faint trace of albumin in urine.	Recovery in 10 days.
20.	31.	M.	2.	Mother insane Patient weak mentally.	Excited for a few days after first confinement but recovered at home.	Fairly healthy except during pregnancy when she was in poor condition and sleepless.	Normal.	Slept none for 4 days after confinement; on 5th day was singing and praying.	Hilarious and excited, says she is an angel. Abusive and impulsive. Mistakes identities.	Lochia slightly offensive. Temperature 100° Pulse 90. Very constipated.	Recovery in 6 months.
21.	20	M.	2.	Mother very nervous and excitable and sister insane.	None	Working hard in the fields during pregnancy. Good health	Normal. Was very worried about the child as her first died on the 10th day.	At 14th day became restless and in two days was acutely excited.	Great mental confusion. Filthy and degraded habits Acute excitement.	Weak and anaemic. Lochia arrested. Normal temperature.	Recovery in 2 months.
22.	31.	M.	1.	None	None	Strong healthy woman.	Post-partum Haemorrhage	At 10th day became delirious, shouting out loudly or weeping.	Vivid hallucinations of hearing. Incoherent and excited. Great mental confusion.	Lochia present and sweet. Temperature normal. Very constipated and anaemic.	Recovery in 2 months.

No.	Age.	M. or S.	No. of Preg.	Heredity.	Previous attacks.	Previous Condition	Labour.	Mode of Onset.	Mental Condition on admission.	Physical Condition.	Termination.
23	26.	M.	1.	Father drunkard. Maternal cousin and aunt insane.	None	Splendid physical specimen always. Slight attack of peritonitis at 2nd month.	Protracted labour. In early days of puerperium got no sleep because her father was drinking in the house.	After nursing her mother who was ill from 8th to 14th day she collapsed physically and developed hallucinations of sight and hearing.	Wild excitement and great mental confusion. Filthy habits and obscene talk.	Lochia present and sweet. Normal temperature.	Mammary abscess at 3rd week. passed through period of sub-acute mania with confusion and recovered in six months.
24.	29.	M.	4.	Mother's family neurotic. Patient was youngest of a large and weakly family.	Excited for 3 days after first pregnancy.	Four full term confinements in a space of 33 months. Always sleepless and weak in her pregnancies.	Normal.	At 21st day became sleepless and depressed. Marked homicidal tendencies and attempted suicide.	Depressed on account of suicidal impulse but clear and lucid in conversation and conduct.	Constipated and anaemic. Normal temperature.	Recovery in 4 months.
25.	26.	M.	1.	Maternal uncle insane.	None	Husband consistently starves and maltreats her. Good Health.	Normal.	After nursing her child till 21st day she became depressed and confused.	Bewildered and slightly depressed.	Temperature normal Constipated and anaemic.	Recovery in 4 months.
26.	26	M.	1.	None	None	Always in poor health. Threatened abortion at 3rd month.	Normal.	Became suspicious and depressed on 3rd day.	Terrifying hallucinations of hearing. Attempted suicide.	Lochia slightly offensive for a few days. Temperature normal.	Recovery in 12 months, after long period of mental confusion.

No.	Age.	M. or S.	No. of Preg.	Heredity.	Previous Attacks.	Previous Condition.	Labour.	Mode of Onset.	Mental condition on admission.	Physical Condition	Termination.
27.	24.	M.	1.	Father drunkard and died of Apoplexy.	None	Healthy but nervous Anaemic and constipated.	Post partum haemorrhage Removed 14 miles at 10th day to a dirty house.	Sleepless and weak from 4th to 10th day.	At 14th day was delirious. Mistakes identities. Maniacal incoherence.	Lochia slight and inoffensive. Temperature 101° Anaemic. streptococci and B. coli communis in uterus.	Progressive anaemia. Mammary abscess. Death from cardiac failure and anaemia at 6th week.
28.	36.	M.	1.	Maternal cousin insane.	None	Poor health. Anaemic and constipated during pregnancy.	Normal.	Depressed from time of confinement till by 6th week she was agitated and excited.	Great excitement with terrifying auditory hallucinations.	Temperature normal	Marked depression and slight confusion with occasional attacks of agitation. Recovery in 2 years.
29.	33.	M.	2.	Uncertain	None	Poor Health. Sleepless and anxious.	Normal.	At 4th week became restless and depressed.	Great excitement and agitation alternating with periods of great depression.	Anaemic and very thin.	Gradual recovery in 18th months.
30.	21.	S.	1.	Mother insane. Patient weak minded.	None	Good Health	Normal. attended by a trained nurse.	At 7th day became violently excited.	Wild excitement. Resistive, katatonic movements and speech.	Lochia normal. Temperature 98.2°	Passed through period of slight mental confusion after the acute symptoms had subsided and recovered in 4 months.

No.	Age.	M. or S.	No. of Preg.	Heredity.	Previous attacks	Previous Condition	Labour.	Mode of Onset.	Mental Condition on admission.	Physical Condition.	Termination.
31.	33.	M.	1.	Maternal aunt insane.	Insane at adolescence	Poor health and very constipated. Sleepless for weeks.	Considerable post partum haemorrhage.	Listless and depressed till 4th week. At that time she had to remove her house and in a few days became excited.	Hallucinations of sight. Delirious. Illusions of identity.	Temperature 99° Acute follicular tonsillitis. Great exhaustion.	Died in 4 days.
32.	20	S.	2.	Not possible to ascertain.	None	Hard worker and nursing 1st child Good Health.	Normal. No attention of any kind except neighbours. Dirty surroundings.	At 2nd week became languid and depressed and in a few days was confused and maniacal.	Delirious and incoherent. Resistive and homicidal.	Tenderness in umbilical region. Slight and mildly offensive lochia. Staphylococci.	Progressive anaemia. Death in 4 weeks.
33.	20	S.	3	Father insane. Patient weak-minded.	None	Good Health. Drinking during pregnancy to an unusual extent	Normal. Excessive alcoholic excess in first few days of puerperium.	Depressed at 10th day. Became excited at 14th.	Resistive and excited. Hallucinations of hearing.	Slight discharge till 5th week. Staphylococci and Gonococci.	Passed through a cycle very like Katatonia and is at present mildly demented.
34.	32.	M.	5.	Mother insane	Five attacks one only connected with pregnancy.	Good Health. Much worried by a drunken husband.	Normal.	At 21st day became restless and confused.	Mental confusion Rambling in conversation and slightly restless.	Trace of albumin in urine. Thyroid enlarged.	Recovery in 12 months to relapse.

No.	Age.	M. or S.	No. of Preg.	Heredity.	Previous attacks.	Previous Condition.	Labour.	Mode of Onset.	Mental Condition on admission.	Physical Condition.	Termination.
35.	38.	M.	5.	Mother had attack of melancholia at 78.	None Had brain fever as a child.	Influenza five times in past 4 years, once followed by pneumonia. Anaemic and weak during pregnancy.	Delayed. Rigor half an hour after delivery. Temperature 101° and several rigors each day.	Temperature high till 5th day when she suddenly became maniacal, cursing and swearing.	Vivid hallucinations. Intense excitement with intervals of comparative sanity with confusion.	Streptococci in blood, later septic discharge. Temperature 101°	Progressive Anaemia. Death in 4 weeks.
36.	28.	M.	4.	Child was an anencephalous monster. Third case in the family.	None	Poor health. Great difficulty in all her labours and weak after them. Had a ravenous appetite but ate only bread and tea.	Retained placenta for 3 days. post-partum haemorrhage.	Lochia offensive on 5th day and temperature rose to 102°. On 7th day she became delirious.	Constant muttering delirium.	Staphylococci in uterus at first. Streptococci in blood later.	Extensive thrombosis. Death in 7 weeks.
37.	45.	M.	8.	None	None	Healthy. During pregnancy her husband was ill and she had to work to support the family and was starved.	Normal.	Two weeks after confinement she became depressed.	Depressed with delusions of unworthiness.	Traces of albumin Erysipelas.	Recovery in 2 years.
38.	20	M.	1.	Several members of the mother's family weak-minded.	None	Healthy	Normal	On 15th day became restless, took violent aversion to her friends.	Wildly excited. Delusions of poisoning. Illusions of identity.	Mammary abscess.	Recovery in 7th months.

No.	Age.	M. or S.	No. of Preg.	Heredity.	Previous attacks.	Previous Condition	Labour.	Mode of Onset.	Mental Condition on admission.	Physical Condition.	Termination.
39.	24.	M.	1.	Sister insane.	None	Healthy	Normal.	At 5th week lost all interest in her baby and household. Threatened suicide.	Depressed and confused. Believed animals were in her blood.	Very anaemic.	Developed elipepsy. Had an abortion and recovered in 12 months.
40.	25.	M.	1.	None	None	Drinking heavily for two years.	Normal.	Rather depressed from day of confinement. Drinking till end of 3rd week when she became excited.	Impulsive and excited. Depressed at times and threatening suicide.	Temperature normal Anaemic and tremulous.	After period of mental confusion with occasional attacks of impulsive excitement, she recovered in 4 months.
41.	26.	M.	2.	Uncertain	None	Starved and ill-treated by her husband.	Normal.	After nursing her child, at the 5th week she became very depressed.	Restless and confused. Very depressed.	Temperature 99°.	In 4 months she was perfectly well. Two days after discharge she had influenza and in two days more was sent back in same mental condition as at first, recovering in 6 weeks.
42.	40.	M.	3.	Maternal grandfather insane.	Three, the first being puerperal	Excellent health.	Normal.	At 4th week she became restless and confused.	Very confused and incoherent.	Normal temperature: no complications.	Passed through condition of stupor and then furious mania, recovering in 8 months.

PROGNOSIS.

Of the 42 cases, 29 or 69 per cent recovered, eight cases or 19 per cent died, while five cases remain in the asylum in a chronic condition.

The percentage of recoveries is only slightly lower than that quoted by most writers and is largely influenced in my cases by the very large number of deaths, which however was the result of the very exceptional character of some of these fatal cases. Dr. Clouston gives a recovery rate of 75 per cent, Bevan Lewis 80 per cent in sixty six cases. McLeod in his summary of 814 cases gives a rate of 77.3 per cent. Sir J. Batty Tuke had 76.7 per cent in 73 cases.

Looking at the recoveries according to the duration of the disease I find that 2 cases recovered in a fortnight. These were the two cases that occurred after eclampsic seizures. This rapid recovery itself gives them a different character from the others. Up to the end of the second month three cases recovered, in the 3rd month 2 cases. The maximum recovery rate was from the 4th to the 6th months, six cases recovering in four months and four in six months. At the 7th month 2 cases recovered, at the 8th two cases, at the 10th two cases and at the 12th three cases. The remaining three/

three recovered within two years.

The relation of the duration of the Asylum treatment to the duration of the illness before admission shews the importance of early treatment.

The following table shews the particulars of those cases that were sent to the Asylum within a week of the onset of the first mental symptoms.

Age	Heredity	Duration of symptoms on admission.	Time of Recovery.
31	None	3 days	2 months
24	None	3 "	4 "
20	Aunt insane	5 "	10 "
20	Father insane	5 "	3 "
26	Uncertain	4 "	6 "
29	Aunt insane	4 "	8 "
40	None	2 "	2 "
27	Several relatives insane	6 "	6 "
29	Family neurotic	6 "	4 "
26	None	7 "	12 "
21	Mother insane	5 "	4 "
31	Mother insane	3 "	6 "
20	Mother and sister neurotic.	2 "	2 "
26	Maternal cousin and Grandfather insane	3 "	6 "

The table shews that of those who were sent to the Asylum within one week of the onset of the mental symptoms, 10 recovered in six months. One case that recovered in 10 months had been depressed for four weeks before the confinement although the actual acute symptoms did not appear till five days before admission. One who recovered in twelve months had been in exceedingly poor health during the pregnancy with threatened abortion so that in these cases the predisposing causes had been at work for some time.

In the above table I find that out of 14 cases only four had no history of insanity. Of my 29 recoveries, 15 had definite predisposition, a percentage of 52 being almost equal to the total 55 per centage in all the 42 cases. In view of this I am inclined to consider that the hereditary predisposed cases recover as quickly if not more so than the others, because in the former the physical causes have been of less duration and severity than in the latter. The neurotic patient is more easily upset by a slighter physical cause and so apart from grave septicaemia the markedly predisposed woman in an exhaustive insanity like puerperal may in some cases recover her mental stability more quickly than the less/

less predisposed. What leads to a patient being sent early to the asylum is usually the precipitate attack of wild excitement most likely to occur in the predisposed.

The cases that took longest to recover had as a rule been ill for some weeks, suffering from the progressive forms of melancholic confusion that resulted from prolonged physical exhaustion and may be exaggerated by lactation. This of course does not apply to all cases but it might be pointed out that in the 2 cases of rapid recovery where there was no discoverable heredity the cause was an abrupt physical one, post-partum haemorrhage in one, delayed labour in the other.

The following table gives statistics regarding the 8 cases sent in at periods ranging from 2 to 5 weeks after the first mental symptoms appeared.

Age	Heredity.	Duration of Mental symptoms on admission.	Time of Recovery.
45	None	Two weeks.	2 years
24	Sister Insane	Three weeks.	12 months
25	None	Three weeks.	4 months
40	Grandfather Insane	Two weeks.	8 months
32	Mother Insane	Two weeks.	12 months
36	Cousin Insane	Five weeks.	2 years
33	None	Three weeks.	18 months
30	Father insane	Two weeks.	10 months

It will be noted from this table that in those 6 8 cases that were long in recovering four out of six were over 30 years.

The following table gives statistics of those who remain insane.

Age	Heredity	Duration of attack on admission.	Duration of residence.
43	Aunt insane	6 weeks	3 years.
32	Paternal grandfather insane	4 "	3 "
20	Father insane, patient weak-minded.	4 days	2 "
34	None	7 "	4 "
41	Mother insane	14 "	$3\frac{1}{2}$ "

The girl aged 20 in this table recovered from the puerperal attack, but as she is weak-minded and irresponsible, she remained in the asylum.

The advanced age on admission of the chronic cases is noteworthy.

Eight deaths, a percentage of 19 seems large compared with other statistics. Dr. Clouston had a percentage of 8.3, Bevan Lewis 8.5, M^{c}Leod 9, Sir J. Batty Tuke had 6 deaths in 73 cases, only two clearly traceable to the insanity. It must be noted that amongst my cases were a large proportion of septicaemic cases while three of the eight deaths were not primarily due to the puerperal state. The deaths were as follows:-

Septicaemia 1 case; Exhaustion of prolonged delirious insanity, apparently septicaemic in origin 4 cases; erysipelatous infection of cut throat 1 case; otitis media 1 case; Meningitis 1 case.

TREATMENT.

The question of Prophylaxis with regard to puerperal insanity is a wide one indeed. The advocacy of any measures to that end is the monopoly of Asylum Physicians whose increasing experience only makes them more insistent, while the carrying of them out lies with the great mass of the public who think that such ideas though savouring of "faddism" might very well be applied to certain other people, and between these two groups there is a great gulf fixed. Probably the one person who could succeed in bridging it is the family physician, but how seldom is he consulted in such matters as the suitability of marriage for this person, the question of future pregnancies etc. Not often enough it is to be feared in cases of physical disease, and hardly ever as regards mental qualifications.

In dealing with puerperal insanity, we should have to take into account all measures for the prevention of the propagation of the neurotic taint, a subject which cannot be entered into here, but especially the question of marriage in relation to existing predisposition. Here we are met by the difficulty of deciding as to who ought to marry, a great difficulty indeed knowing as we do how slight a neuropathic/

a neuropathic tendency may precipitate an attack of insanity in a trying period like the puerperium and face to face with the fact that such a neuropathic individual may be the offspring of a stock which intellectually and physically might be selected for purposes of homo-culture. The ordinary person, if he bothers himself at all about his ancestry, does so usually by means of a family tree, and is more concerned with matters of "blood" than with the neurotic tendencies underlying in many cases the genius that may have glorified the family tree. Questions such as Dr. Clouston raises in his continuous efforts to set before the public mind the idea of a "health conscience" are of the utmost importance but are probably looked upon by the great mass of the public for whom they are intended, as very good reading but much too advanced. Such people talk glibly of the lethal chamber for all mental unfortunates, and forget that in another generation, it may be in another year if in that time they marry, their point of view may change entirely. The question of who should marry is not one that can be easily decided. A record such as we might find on the fly leaf of the old family bible seldom contains anything that would serve to guide, and/

and the idea of two persons, who contemplate marriage, comparing health certificates with comments upon the mental capacities of maternal aunts etc., however desirable it may be, is not one that is likely to be achieved in the near future.

Apart however from the predisposition to mental breakdown there are numerous questions connected with puerperal insanity and its causation that demand attention. It is perhaps too much to expect the family physician to undertake the necessary labour of investigating the neurotic tendency of every woman whom he is called upon to attend in her childbed, and yet a knowledge of this might in many cases determine the treatment which should be given her during the pregnancy. Mental as well as physical health would then be taken into account in determining how much might be undertaken of domestic and social duties by the pregnant woman. In many cases unfortunately such a problem has only one solution for example, for the poor unmarried girl, who, in face of the prospective additional burden, has to continue working harder than ever during her pregnancy. Skilled attendance at the confinement, the avoidance of unnecessary exhaustion by the exhibition of chloroform, and many other questions are/

are points that concern the practitioner especially, but, if a study of cases of puerperal insanity indicates certain causes that have at least a contributing effect, the knowledge of a neurotic predisposition in any case ought to make us redouble our efforts to avoid as much as possible the occurrence of anything that would tend to mental or physical exhaustion.

One thing certainly lies in the province of the Asylum Physician in all cases, which ought and in many cases does appeal to the patient and her relatives, and that is the question of avoiding a recurrence. It may be that most women who have suffered from puerperal insanity at their first or other confinement may have more children without a return of the mental alienation. Even where the cause seems to have been purely physical, it is the duty of the asylum physician to warn the patient as to the possible recurrence. Even although statistics go to shew that relapses and recurrences are not very common, no one case can be definitely pronounced upon. In many cases the advice will not be taken and will be treated much in the same spirit as the advocacy of non-marriage in neurotic persons, and the claims of a health conscience, but nevertheless such advice is only the necessary expression of conscientious/

conscienticus views based upon knowledge, experience and sympathy.

Although many cases can be and are treated at home, almost all the cases that we see in Asylums are such as preclude the possibility of home treatment. There are a few cases it is true which recover so very rapidly from the mental excitement, that we are inclined to think they should not have been sent away from home, but some of these transient cases are amongst the most violent, and it is a difficult thing in the face of urgent symptoms to diagnose between true puerperal delirium and transient or even febrile delirium. The impulsive and dangerous tendencies of puerperal cases make their nursing at home a source of constant anxiety and the aversion to relatives which is such a common symptom and the difficulty the physician has in getting his orders carried out at once without the interference of the friends combine to make home treatment extremely difficult and in most cases impossible. To people in good circumstances the rearrangement of the patient's room that is absolutely necessary in such violent and it may be suicidal cases, the expense of an adequate staff of skilled nurses etc., may be no obstacle, but in the vast majority of cases removal from home has to be considered/

considered very early. Unfortunately it is a consideration that brings much pain to the relatives and many forebodings to the family physician who has to undertake the responsibility of suggesting it. Puerperal excitement calls for urgent attention and immediate treatment but in many cases much valuable time is undoubtedly wasted where removal to the asylum is being considered and during that time the only treatment possible is probably the powerful drugging of the patient with sedatives to make her management at all possible. There is no form of insanity that holds out better prospects of recovery than that occurring during the puerperium and yet here delay in securing the proper hospital treatment is fostered by the fact that removal from home means removal to an asylum. In these days when so much change has taken place in the character of Asylums, when hospital methods and hospital ideals play such a part, no Asylum Physician would care to emphasise the stigma that attaches to a stay in an Asylum. We cannot however get over the fact that for as much as we do to remove it, still it exists in the minds of most people. Now if any class of patient ought to be saved the stigma of certification, surely the poor woman/

woman who ends the stress of a natural function, childbearing, in an attack of confusion and excitement which we know will most likely pass away and leave her quite well again, surely she ought to be considered. How many of the acute delirious cases that now and again end fatally might not be added to the number of our recoveries were it possible to get the patient into the proper surroundings for treatment in time. During a recent visit to Amsterdam I was shewn over the pavilion for the recent insane which is attached to the General Hospital there, the Wilhelmina Gasthuis. There is in Glasgow a reception Hospital for incipient cases of insanity and many puerperal cases are kept and treated there but I know that the system does not yet permit of the very excited cases being kept, and these are still sent on to the Asylums.

The treatment of a puerperal case demands nursing skill which, not from lack of training or ability but from lack of opportunity is often deficient particularly in the smaller Asylums, where puerperal cases are not so frequent as to ensure an experienced nurse amongst the changing staff. In fact I have found once or twice when a serious puerperal case had passed through our hands that the nurse in charge, after this instruction and experience/

experience, found her desire for general nursing so stimulated that she left us to train her successor by means of the next case. The gynecological wards of a general hospital might take some of the cases, but undoubtedly all of them might have treatment for some months, without the necessity of being certified insane, in some such wards as those already spoken of. How important it is too in those cases to get at the very outset a clear idea of the condition of the reproductive organs! So many of the cases have obscure symptoms whose thorough elucidation might assist the treatment, so many cases of pelvic mischief may keep up the milder mental symptoms indefinitely, and so very few of the patients are able to assist us in regard to their symptoms as a sane person could, that we can only get reliable information from the "educated finger" of the gynecological specialist. Many cases of puerperal insanity present features that strongly suggest a septic origin when there is no apparent evidence of such a cause and much light would undoubtedly be thrown upon the aetiology of the condition were it possible to have every case completely examined by a gynecologist. In special cases we call in his aid, but where recovery is rapid and uneventful the diagnosis/

diagnosis of pelvic complications is left to the Asylum doctor, when more might be accomplished were the cases treated from the first in conjunction with the advantages of a large hospital. Bacteriology too, which it is true is carried out with conspicuous success in some Asylums would be more easily applicable in a well equipped hospital. The objection to the proposal may be that it could only be applicable to patients within a reasonable distance from a large town with a hospital, but in this country there are many localities where the removal would necessitate a journey no longer than is necessary on removal to an Asylum. At any rate the nature of these cases is sufficient grounds for a plea for some means of avoiding certification.

In the Asylum these cases demand immediate and continuous attention and it is no uncommon thing for a puerperal case to monopolise most of the medical and nursing attention during at least the acute stage.

In the treatment, nursing holds a foremost place. The excitement, impulsive conduct, and suicidal attempts of this patient, the degraded habits and open aversion to those around her of another/

another demand the watchful care and calm forbearance of the best Asylum nurse, while the special symptoms and the special nursing duties they demand, necessitate a special training if these duties are to be carried out thoroughly. The nurse who has the responsible charge of a case must be taught not only the methods of vaginal dcucheing etc., but must have a thorough knowledge of the antiseptic methods to be employed in such cases. The surroundings of the patient are of great importance and will vary according to the mental symptoms. Rest in bed is always a necessity in the early stage of the disease whatever form the mental symptoms take and this rest should be as complete as possible. The mildly excited, the melancholic and the convalescent may be treated amid the brighter surroundings of a hospital ward, but the acutely excited and deliricus cases require isolation, not seclusion, but treatment in a single room with a sufficient staff of nurses. The intensity of the excitement will determine largely the number of nurses the patient requires, but in view of the impulsive tendencies it must be ample. Apart altogether from the suicidal cases no patient must be left alone for a moment for there is always the risk that/

that in an unguarded moment the impulse of a delirious case may lead to accident. However intense the excitement there is rarely ever any need for long continued restraint by the hands of the nurses and indeed in many cases especially those with hallucinations of sight this only intensifies the condition. The paroxysms of motor excitement usually come in sharp bursts and during the past eight years I have not seen a single puerperal case mechanically restrained or in seclusion by day or night. It is a trying task for a nurse but the true test of a nurse's fitness for asylum work is probably the manner in which she behaves under the constant strain of watching and combating the vicious assaults and impulsive acts of an excited puerperal patient. One thing should be pointed out to all who attend on these cases, the necessity of guarding against injuries, however trivial, caused by the teeth or nails of the patient. There seems to be a special tendency on the part of puerperal cases to bite and scratch, - I find it mentioned time and again in the medical certificates - and lately I had a case under treatment of whom the charge nurse says "everything she touches suppurates."

Fresh/

Fresh air, should be freely admitted to these cases, the majority of whom are also suffering from anaemia in some form. In summer it is wonderful to see the effect upon such patients through placing them out in bed on the grass. The air and sunlight not only improve the bodily condition but soothe and quieten for a little even the most excited. The excitement of puerperal cases is in nearly all cases an expression of fatigue and therefore apart from the physical state of a woman in the early puerperium, rest in bed is indicated as the first requisite in avoiding further exhaustion. An acute patient in bed is also more likely to be kept under continuous observation and she has fewer opportunities of accomplishing any damage to herself or others in an impulsive outbreak. After some weeks rest, when the symptoms of acute exhaustion have abated, a few of the very excited whose bodily condition permits, may benefit by brisk walking for half an hour each day, the patient going to bed again afterwards. I have found this specially beneficial in quietening excitement when it was followed by a hot bath. Two of the most resistive and violent but not suicidal cases were turned out in summer into a large park and/

and there, watched at a short distance by two nurses, they seemed to be quieter in the absence of continued interference and rolled about with much benefit to their condition.

In all cases after the acute mental and bodily symptoms have subsided, fresh air and exercise are powerful recuperatives and it is here that the Asylum has the advantage over home treatment and probably also over most hospitals.

In a disease like puerperal insanity where the mental manifestations are so acute and the bodily complications so varied, each case must stand largely by itself in the matter of treatment. There is no doubt that although the mental symptoms are extremely obtrusive, the bodily symptoms and general nutrition of the patient are of far greater importance. Kraepelin(1) says regarding the cases due to exhaustion "Complete and permanent recovery always takes place if the patient can be kept alive long enough."

Foremost amongst the considerations in respect to maintaining the patient's general nutrition is the question of feeding.

The melancholic refuses food because it is poisoned/

(1) Kraepelin. Lectures on Clinical Psychiatry p.136.

poisoned or because she wants to die, the katatonic resists every attempt to feed her, the deliricus and excited patient pays no attention to the calls of hunger if she has any, and in every case food is urgently needed. The exhausted and anaemic states that underlie even the most excited appearances require repeated administration of the most easily assimilable food. Fluid food answers best in all cases at first and is of course necessary where artificial feeding has to be carried out. Authorities differ as to the amount of food to be given to the acute cases. I have usually employed the method recommended by Dr. Clouston of giving eggs and milk frequently and abundantly. In all cases of acute insanity the food should be predigested whether it is taken by the patient or given by the tube. I use Liquor pancreaticus 1 drachm to the pint of milk and egg. The food should be given in small quantities say half a pint and at intervals of two hours and as much as six pints of milk and 8 to 12 eggs may be given in 24 hours. It is absolutely necessary especially where the patient has to be forcibly fed to keep a record of the amount taken. A minimum quantity must be fixed and tube feeding must never be delayed if this quantity/

quantity is not taken. The following is extracted from the chart of a recent case.

10.30 a.m. 8 ozs. milk, 2 ozs. wine.
12.30 p.m. 8 ozs. custard;
2.30 p.m. 8 ozs. milk;
4.30 p.m. 8 ozs. custard and wine;
6.30 p.m. 8 ozs. custard;
8.30 p.m. 8 ozs. milk and wine;
1 a.m. 8 ozs. custard;
4 a.m. 8 ozs custard and wine.

In a few cases the eggs seem to intensify the gastro-intestinal derangement and in these cases such substances as plasmon, malted milk, etc., may be given, or even sanatogen. The general condition of the patient is in most cases the only guide as to the requisite amount, but the diet must be liberal. If as I have done in most of the acute cases, the stomach is washed out every morning there is little fear of the forced feeding aggravating the general disorder. Stimulants including beeftea, wine or whisky may be added and alcohol should always be given where the patient's condition is not improving with the diet. In the exhausted states and in the long continued delirious cases whisky or the ordinary egg-flip made with sherry/

sherry are highly beneficial and apparently save life in some cases.

Refusal of food is very common. Bruce[1] says "in all acute insanities the appetite is diminished and the attempt to force large quantities of food on such a patient is not only bad treatment but must be actually harmful. The loss of desire for food is merely an indication that the digestive power of the stomach is wholly or partially in abeyance and when such a symptom exists two to three pints of milk diluted with aerated waters is sufficient in 24 hours."

I have not seen any bad effects from liberal feeding in the most acute puerperal case where the food was predigested and the stomach washed out regularly.

Nourishment is wanted in these cases and the tone of the stomach like everything else will tend to become normal as the patient gains in strength.

Artificial feeding may be carried out by means of the oesophageal or the nasal tube. Both have their advantages but the oesophageal is the quicker method and in some cases that is a consideration. The/

(1) Bruce. Clinical Psychiatry. p.227

The oesophageal tube necessitates the use of the gag and causes more resistance on the part of the patient. The nasal tube on account of its calibre more easily tends to pass into the trachea or to curl up in the mouth. In later stages of the attack it may be necessary to modify the diet while still using the tube, and vegetable soups, scraped beef, etc., can be passed by the oesophageal tube but not by the nasal.

In many cases I wash out the stomach just before giving the food using the siphon action of a long rubber tube by which the food is then given. In a few very resistive cases where there was little confusion but simply obstinate resistance I have found it extremely difficult to get the oesophageal tube to pass even with much experience without using much force and then I use a method which has never given any trouble however risky it may appear. When the tube is sticking at the back of the pharynx I allow a few drops of tepid water to run into it and as these escape at the end swallowing invariably takes place and the tube can easily be passed at that moment. In withdrawing the tube it ought to be pinched firmly between the finger and thumb at some part of its length as by this means anything that does/

does remain in it cannot usually escape. I have never yet seen any accident even a trifling one caused in the course of artificial feeding, but it is only by observing the utmost care in the smallest details that they are to be avoided. Artificial feeding may have to be continued for a very long time in some cases but in the majority a lessening of the acute mental symptoms is accompanied by a return of the normal appetite.

The question of food after the acute stage has passed and the stomach has regained something of its normal tone is not so urgent, but is nevertheless difficult. Much of the disorder of the gastro-intestinal tract is part of a vicious circle in which the diminished nervous tone and the putrefactive processes in the tract react upon each other so that until the digestive processes are normal it is not advisable to greatly modify the diet. Great attention must be paid to the condition of the mouth. The sordes that accumulate all over the teeth, mouth and lips must be removed periodically both from the point of view of the patient's comfort and to combat all sources of toxaemia. Mouth washes of Boracic acid and swabs of Boroglyceride are useful and I have got the/

got the best results from 10% solutions of Listerine. The foetid breath usually yields to the washing out of the stomach, which I have employed in all acute cases save those in a very exhausted state and undoubtedly septic cases. Wherever I have had to tube feed the patient I have washed out the stomach once a day. It is useless and also dangerous to attempt to wash out the stomach without sufficient assistance to absolutely control the patient. In many cases the relief afforded the patient by the lavage is considerable and induces her to submit to it without resistance. In repeated lavage care must always be taken to regulate the amount of water poured in at one time and also the rate of filling. If the water be poured in too rapidly it is conceivable that the muscular tone of the stomach which is below the normal may be further injured by the rapid distension. In many cases the stomach cannot retain much fluid and careful watch must be kept to see that the water does not regurgitate past the tube and reaching the mouth cause trouble. This can easily be guarded against by watching the ease with which the water leaves the funnel and in no case should more than 20 ozs. be poured in at one time. The water was used/

used at a temperature of 98°F preferably boiled and allowed to cool to that temperature. The quantity to be used during one operation is important. I never wash out the stomach with less than 2 large ewers-full about 15 pints. Formerly I used some deodorizer or antiseptic in the water and have employed Permanganate of Potash. Quinine, naphthaline and listerine but though these may have a temporary effect upon the odour of the breath I do not think they have any real antiseptic value. The removal of the undigested food and the lavage of the stomach mucous membrane with ordinary water is most beneficial and formerly I was apt to take the deodorizing of the stomach and the absence of foetor as a sign that the lavage was successful. I am of opinion that better results are obtained by lavage with plain water continuing the operation for some time after the exhausted water is flowing clear and sweet. The lavage was usually carried out just before the first morning meal. At first there was usually in the acute stages a flow of greenish yellow bile-stained water and I have in some cases had to use 30 pints of water before it ceased but it is just in these cases that most relief is obtained and it is also here that/

here that the real condition of the water is masked if any disinfectant is added.

In addition to the fluid in the food, these cases should have quantities of tepid water and such diluents as Imperial drink, to assist the processes of elimination and also to counteract the anaemia.

The condition of the bowels requires immediate and continued attention. Constipation to some degree was almost invariably present and the extraordinary distension of the large bowel in some of these cases was scarcely credible. Calomel in small doses, not more than 2½ grs. in any case to start with, was always given on admission. More may be given later on but a larger initial dose more often than not produces sickness and vomiting. There are very few cases in which the patient cannot be got to take this without any difficulty in the form of the 5 gr. Calomel lozenge. It should be followed in two hours by a small dose of sulphate of magnesia. The antiseptic effect of the calomel upon the small bowel is useful in addition to its effect in stimulating the hepatic function. Even where purgative enemata and lavage of the bowel are being employed purgatives of a mild kind must be continued as even after weeks of a fluid diet and this/

this rectal treatment, in some cases masses of faeces come away at intervals. Enemata should be employed at the very outset. At first these may be the ordinary soap and water enemata supplemented by addition of a drachm of Glycerine. They should be given morning and evening and continued as long as they continue to bring away solid faeces. Lately I have employed lavage of the large bowel as recommended by Bruce. The bowel was washed out at least every third day with ordinary water or better normal saline solution at body temperature. It is a more difficult process to carry out in an excited case even than the feeding, but again its beneficial effects can be obtained without any trouble if a sufficient margin of assistance is allowed and every nurse attends to her part of the work.

The nurse must always be reminded of the presence in many puerperal cases of haemorrhoids and the pain from these caused by enemata and rectal doucheing is often the cause of the patient's struggles. Great attention to cleanliness in such cases and the rubbing of Hazeline on the parts relieves the condition. When the haemorrhoids are very painful and enemata urgent I have given a morphia/

morphia suppository previously and in some cases swabbing with a weak solution of cocaine allowed the operation to be carried out without any difficulty.

Whether the acute mental symptoms of some puerperal cases are due to, or are aggravated by intestinal toxaemia or not, it is certain that anti-toxaemic measures are attended with beneficial results and often the acuteness of the symptoms is relieved by such measures. But with the lavage of the stomach and lower bowel there is still the greater part of the alimentary tract unattended to and here we come to the question of intestinal antiseptics. Two difficulties have to be considered. (1) To obtain an antiseptic of value which is not toxic in its effects and (2) to obtain one which will not be absorbed before it reaches the intestine. That much of the intestinal derangement that exists in many acute cases is associated with the duodenum is evident from the hepatic disturbances that persist long after the digestive function of the stomach has been restored and the constipation controlled. In such cases an occasional dose of calomel is indicated. Many substances were used with a view to disinfecting the/

the intestinal tract, but such substances as eucalyptus and listerine seemed to be absorbed by the stomach while salol, soda sulphocarbolate and beta naphthol produced in some cases derangements of digestion. I have made a routine practise of giving Salol 5 grs thrice daily with Calomel 2½ grs. every third day in all acute cases where there seemed to be evidences of intestinal toxaemia. Salol is partly excreted as carbolic acid and the urine must be carefully watched. There seems in most cases an improvement in the condition, but salol should not be continued for long at a time. In two long continued cases of delirium, diarrhoea appeared and was very intractable necessitating the repeated use of starch and opium enemata.

Amongst the constitutional symptoms that accompany puerperal insanity loss of weight and anaemia are most important. Careful attention to the feeding and the addition of tonics soon restored the weight in most cases, but careful attention often failed to bring this about for many months. Cod liver oil, Syrup of Hypophosphites and similar substances were always added to the regimen of convalescent patients. In the acute stages much benefit was derived from Quinine. It was given as/

as the sulphate in all febrile cases, but in the latter stages I give it as the Ferri et Quininae Citras. As regards the anaemia I have tried many remedies and in the exhausted states I have experimented with many drugs guided by my estimations of Haemoglobin and red corpuscles.

In the very exhausted cases with a temperature, and an anaemia consisting of diminution in the number of red corpuscles great benefit was derived from the administration of large quantities of fluid. Injections of warm saline enemata repeatedly or the subcutaneous injection of sterilised normal saline are then indicated.

The most difficult cases however to make any progress with were those in which the swinging temperature and delirium was accompanied by a progressive anaemia marked as regards the red corpuscles but chiefly affecting the Haemoglobin. In one case the Haemoglobin was 50%, the corpuscles 3,750,000 on admission. Bynohaemoglobin, half an ounce thrice daily, was given with no effect, the Haemoglobin falling to 25% though the corpuscles increased to 4,070,000. Liq. Ferri Perchlor 15 minims thrice daily was then given with the addition later of 5 minims Liquor Arsenicalis, but the Haemoglobin fell to 19%, the corpuscles to 2,500,000 and before death occurred the Haemoglobin was/

was practically indeterminable. At the same time subcutaneous injections and rectal injections of normal saline were given. In another case large doses of Arsenic were given, but the patient became sick after the third dose and again on repeating it some days later. When the Haemoglobin had reached 25%, pure Haemoglobin 15 grs. every four hours was given and in two days the estimated Haemoglobin was 50%. It continued at 45% for a week but as the leucocytes diminished in number the red corpuscles and Haemoglobin sank also and the anaemia was as pronounced before death as in the first case.

The temperature rarely called for much anxiety in the acute cases apart from the septic cases. In many cases the temperature yielded to a few days vaginal doucheing but antipyretics were employed and Quinine sulphate in doses of 10 grs. given repeatedly till the temperature falls was of use in the early stages with high fever, but I have given it in even larger doses in the continued cases without much effect ---------- but these are the cases in which everything else seemed to fail also.

Bianchi recommends hypodermic injections of Bichloride of Quinine in all the acute sensory insanities/

insanities, which include puerperal cases, where the disease is running a febrile course. I have had two cases in which a temperature of slightly over 100° fell to normal after copious enemata had evacuated the bowel and the effect of vaginal douching on slight elevations of temperature is well recognised in private practice.

In three acute cases there was retention of urine. One of these yielded to hot fomentations over the bladder followed by a warm sitz bath but two had to be catheterised for five days. Great attention must be paid to the bladder for in a few of the most confused cases the patient betrayed no discomfort, in some cases where 60 ozs of urine was drawn off, and in warning the nurses to be on their guard regarding the passing of urine I have always in mind one case of stupor and imbecility who during the early days of the puerperium was allowed to accumulate 100 ozs of urine because the patient, being always wet from the overflow, the nurse was deceived as to the condition.

Sleeplessness is a constant feature of puerperal cases and many of the patients have not slept for several days before admission. The great objection to hypnotics is that they must be given in fairly/

fairly large doses in some cases. Many writers say they prefer to wait for a day or two assisting nature by baths etc. In spite of the violent excitement, there was present in every case a greater or loss amount of exhaustion and sleep was necessary.

I always begin with paraldehyde. In my experience it is best given in a dose of 2 drachms followed an hour later, if sleep is not obtained by another drachm.

In some cases I have used the tube to give it alone convinced of the necessity for obtaining some sleep as early as possible. Chloral Hydrate 20 grs. combined with 25 grs. Potassium Bromide was useful in some cases. In the few cases where I have given Sulphonal as a hypnotic,I have found its well known delayed action against it. It rarly does any good at the first administration unless given in a powerful sedative dose and looking to the fact that Haematoporphorynuria which it sometimes causes, is specially prone to occur in women, I never care to use it in these cases. My own experience of Sulphonal in the treatment of all acute cases is that the patient wakens up from its effect more excited than before and it has to be given in doses calculated/

calculated to knock the patient over and keep her stupefied until the underlying cause of the excitement is combated by other means.

For the intense excitement which like most of the symptoms in these cases is so acute there is no specific. Hyoscine Hydrobromate is the most powerful and quickly acting drug we have probably but it must be used with caution. Like most of the other sedatives it leaves the patient no better and often worse after its effects have passed off. I have only used it for the most extreme excitement where for example an acutely excited woman with occasional terrifying hallucinations banged her head against the bed in spite of the nurses and had $\frac{1}{75}$ gr. Hyoscine. I believe that if continued for any time in acute cases it produces very rapidly a degree of cardiac failure and pulmonary congestion which is quite surprising and often so rapid that it is not attributed to the Hyoscine. I have never given any case more than 3 doses of Hyoscine during any one attack of excitement. In one case where acute excitement with great destructive tendencies and violence persisted for weeks I gave Potassium Bromide in a large dose, one ounce being given in 2 drachm doses every 2 hours. This was selected after/

selected after everything else had failed and it was successful in calming the patient for some days without any bad effects.

In two cases the extraordinary intensity of the excitement induced me to administer chloroform. I had frequently used chloroform to calm the convulsions of Jacksonian epilepsy, and its efficacy in eclampsic seizures is of interest when we think of the explosive nature of the mental excitement of puerperal cases as pointed out by Bevan Lewis. Both cases were mildly confused and restless and at times were the subjects of the most intense attacks of agitation with distressing hallucinations passing to great paroxysms of excitement. I had employed chloroform in a similar condition associated with advanced Phthisis and the effect in all cases was the same. A few whiffs of chloroform were all that was necessary. The patients who were struggling and shouting loudly had taken only two or three inspirations from the towel on which was sprinkled 2 drachms of Chloroform, when the mental condition began to change. One patient who had been clutching and tearing at a nurse in a delirious confusion began to sing much like the initial excited stage of chloroform narcosis as seen in operations, then opened her eyes and said "Hallo nurse,/

nurse, what are you doing sitting there?" She then saw me and said "What a relief that is doctor." The other patient reacted in the same way, a few inhalations being followed by a complete mental change. In both cases the effect lasted for 1½ to 2 hours, the patient gradually getting into the same agitated state as before.

Campbell Clark (1) pointed out a similar effect of chloral in some cases which he says "induced a saner perception of surroundings, delusions of identity of persons and place having vanished and a pause being marked in the excitement - an ominous pause indeed for the mental reaction is greater than before."

In one case of excitement I found Sulphonal of benefit. The patient had done well with an occasional hypnotic dose of Paraldehyde and after being quiet for some time had a relapse becoming destructive and violent. She was given sulphonal 10 grs. thrice daily for three days and was soon discharged recovered. Trional and Veronal were given in a few cases as hypnotics, but seemed to have no special advantages in those cases. Opium was never/

(1) Campbell Clark. loc. cit.

never used as a sedative in the excited cases, but was given with benefit in the few cases where melancholia was the constant symptom. Two cases recovered with no other medicinal treatment except Tinct. Opii. combined with Tinct Nucis Vom .
The Tinct opii was given in commencing doses of 10 minims thrice daily, each dose containing 5 minims of Tinct Nucis Vom. The opium was increased in one case to 30 minims thrice daily, the other to 20 minims and continued for nine weeks. The agitation in one case continued for several weeks but both were improved from the beginning of the treatment and both recovered after three months during which they were slightly depressed in the mornings and very lethargic. The warm bath is undoubtedly a powerful means of controlling excitement. I have only been able to employ it as yet in seven cases of puerperal excitement. Its use entails a great amount of care and extra supervision and it must be employed in all cases with a due sense of the risks attendant.
The nurses must be ample in number and impressed with their duties, for although in most cases the excitement is much calmed by the bath yet the risks of impulsive conduct are still present. The bath is filled with water at a temperature of 100° and this temperature/

temperature must be maintained as constant as possible, a difficulty which appeals to the Asylum nurse accustomed to the ordinary asylum rules and impressed with the risk of adding hot water while a patient is in the bath. I have seen a patient deliberately try to get her hands into the hot water with which the temperature of the bath was being kept up. The hot water is best added out of a small basin, pouring it in at one end of the bath while the patient is kept at the other. The thermometer must be used now and again. The bathing can only be carried out properly by having a sufficient staff. The patient, clad in a thin bathing dress so that the medical officer can walk in at any moment, is placed in the bath and the rest must be determined by the patient's condition and the effect the bath has upon her. If the patient is wildly excited and continues so it is dangerous to go on with the bath, but as a general rule she quietens very soon. Only one of my cases had to be removed. After a period of quiet, probably caused by the novelty of the situation, she became very violent and had to be taken out. The patients who derive most benefit from it are the slightly confused and agitated patient especially, and the acutely/

acutely agitated cases with depressing hallucinations, and I have such a case at present who spends 12 hours in the bath each day. She has impulsive attacks of various kinds, tries to stuff her hair down her trachea, tears and snatches at nurses' clothes, etc., and when put in the bath, after one or two attempts to put her head under water, she rapidly becomes quiet and is improving every day. Two to three hours is usually long enough but I have kept three patients in the bath all day for several days feeding them there and taking them out at bedtime only. The first evidence of the physical effect of the bath in every case was the steadying and slowing of the pulse. In several of the cases the pulse was 120 and after half an hour in the bath it had become less irritable and slowed down to 80 or 90. I have not tried the hot bath in the more exhausted delirious cases. The chance of cardiac failure may be difficult to obviate in these cases, and I have had a case with high temperature and wild delirium who became so ill in a hot bath that I do not care to try a similar case. The physical condition of every patient was carefully gone into before the bath was ordered. There is no doubt that in some cases the wildest excitement/

excitement can be controlled by the bath and soothed in a way which is impossible by any other method and which entirely obviates the constant struggling.

In the acute forms of the exhaustion psychoses the continental writers largely advocate the subcutaneous and intravenous injections of large quantities of artificial serum, normal saline or similar solutions. I have only given subcutaneous injections to treat the anaemia and apparent diminution of fluid in the body which appears in the worst cases, and later in the cases where cardiac failure was threatening. It is greatly recommended in the early stages of all exhaustion insanities.(1) Its success in these cases and in eclampsia supports the toxic causation of both conditions.

Apart altogether from the presence of sepsis, the strictest antiseptic precautions must be adopted in all cases from the first. It is not enough to wait and treat sepsis as a complication. It may be present from the beginning, it may become readily aggravated in an exhausted woman and it must be avoided if it is not present. A careful/

(1) Boulle. Revue neurologique June 1899, p.431
Jardine Edinburgh Obstetrical transactions 1905-06 p.162.

careful examination of the genital canal was made as soon as possible. A history of the labour, etc., was usually got with each case, but a lacerated perinaeum however carefully stitched may undergo any change in an excited woman and no nurse is thoroughly competent to report the exact state of affairs. Doucheing of the vagina with hot antiseptic solution, 1 in 2,000 corrosive sublimate, was carried out twice a day from the outset. If there was a foetid discharge from the uterus the cause was sought for. I had one case in which the removal by the finger of a small piece of retained placenta was followed in 12 hours by a temporary cessation of the mental excitement. Vaginal doucheing itself often brings about a considerable improvement in the mental symptoms. I have had two cases in which the erotic habits of the patient were controlled by more frequent doucheing. In all the febrile cases the height of the fundus above the symphisis pubis was noted on the chart. Where a foetid discharge proceeded from the uterus, the cavity was examined for retained placenta and then, using a Fritsch's catheter, I washed out the uterus with 1 in 500 carbolic solution. The question of curetting is sure to arise in a series/

series of cases. Out of the 42 cases 2 were curetted. In one case a greenish discharge indicated that something was still retained, but curetting brought away nothing. In the other case it was undertaken because everything else had failed to bring down the temperature and the streptococcus was found in the scrapings from the uterus. In both cases the woman's condition was serious and the operation was performed by a gynecologist. Both cases were unimproved and succumbed to exhaustion. Probably the majority of fatal cases of puerperal delirium are streptococcal in origin, and in puerperal septicaemia the general tendency seems to be against curetting as being likely to break down the leucocyte barrier which has formed, and because the organisms being deep down in the tissues it is difficult to remove them. These are questions for the gynecologist but they come into the province of the asylum physician in a certain number of cases of puerperal insanity.

Tinct Nucis Vom was given as a general tonic to almost all the cases. Hypodermic injections of Strychnine, $\frac{1}{64}$ gr. of the sulphate, were useful in cases of threatened collapse. It is very important to be prepared to treat the cardiac failure that occurs in the prolonged and septic cases/

cases. Two cases that afterwards recovered collapsed after the moving about necessitated by a further examination of the uterus, became comatose and almost moribund. Hypodermic injection of ether and strychnine were given but the immediate application of hot water cloths to the skin over the cardiac region had most effect in bringing the patient round. In the cases of marked exhaustion I have employed digitalis and strophanthus. Digitalis was largely used formerly for acute mania, but although I used it in the acute delirious states it did not seem to have much effect upon the excitement and did not have any more than a temporary sustaining effect upon the cardiac condition in those cases that steadily progressed to a fatal termination.

In the condition of slight mental confusion which follows in many of the acute cases and lasts for a considerable time before ultimate recovery takes place, the administration of Thyroid substance was always tried if the condition persisted longer than a few weeks. In two cases repeated daily massage of the Thyroid gland was carried out but without any apparent benefit. In these cases I usually give 5 grs. of thyroid extract tabloid twice a day for three weeks. There/

There is rarely more than the slightest rise in temperature when the gland is administered in this way and scarcely any appreciable loss of weight. In one case 5 grs twice a day produced in 10 days twitchings of the hands and face and the drug was discontinued. It is always two or three weeks at least after the drug is stopped before any improvement in the mental symptoms is apparent. Two cases that were slightly confused for many months after the acute symptoms had passed off and had been treated with the small dose of thyroid were afterwards put on the large dose, 45 grs. Thyroid extract tabloid every day for 8 days. In one there was a temporary return of excitement, in the other there was no change. Both lost about 6 lbs in weight and both remain mentally enfeebled.

Great attention must be paid to the state of the skin, particularly in the acute stages. The constant restlessness of the patient may produce an abrasion over some prominent bone and the tendency to suppurate is so strong in some cases that a troublesome bed sore may form at once. The strictest precautions regarding the bed clothes and body clothes must be taken to avoid any irritation/

irritation or risk of abrasion. Thorough cleansing of the skin, careful drying and rubbing of the part with a hardening lotion such as spirit of camphor will assist in preventing the skin from breaking down. The small superficial abscesses that form on the skin in a number of cases especially after the acute symptoms have passed off were opened,

ANTISTREPTOCOCCIC SERUM.

During the past eight years I have used antistreptococcic serum in a number of cases of puerperal insanity always giving it a trial where the symptoms pointed to a septic infection and the high temperature failed to yield to antipyretics and attention to local condition. Since the theory became prominent that many of the acute cases are due to microbic toxines even where sepsis is not a prominent feature I have used the serum in a number of cases with varying results.

CASE I. N. Mc.K age 24, single was admitted suffering from puerperal delirium. There was no history of insanity in the family. She was greatly confused on admission, restless, laughing and crying alternately, and had occasional auditory hallucinations. There was no vaginal discharge. Her pulse was 130, her temperature 101°. Two days after admission her mental symptoms had completely subsided and the only recurrence of them was in her very exhausted states some weeks later when she had an occasional attack of mild delirium with illusions of identity and rambling talk. These occurred in the evenings a few times and always passing off in an hour/

an hour or two left her quite sane and lucid. Three days after admission with her temperature at 102°, she was given 10 cc. of serum (B.W.&.Co. polyvant).

Immediately after the second injection her temperature rose to 104°. A Vaginal discharge, slightly offensive and greenish appeared for the first time the same day. For the next three days her temperature remained at 103°. She had a daily injection of 10 cc. of serum and great attention was paid to doucheing of the vagina. Along with other treatment she was receiving Quinine Sulph. and Digitalis. The temperature had fallen to 101° on the 14th day but on that day it went up to 104.8°. At this time the left leg which had become greatly swollen due to thrombosis broke down at the ankle which had been inflamed and there was a copious discharge of grumous material. The temperature fell slowly again to 101°. The patient was sinking gradually, the evening delirium becoming more frequent and the serum was discontinued as it was thought not to be benefitting the condition. Three days afterwards however, when the temperature rose gradually to 102.3° and the patient seemed to be breaking up, the serum was resumed in doses of 20 cc.

The/

The patient held her own while the daily dose of serum brought the temperature very slowly down to 100°. In ten days the temperature was normal and she made an uninterrupted recovery.

CASE II. S.W.D. aged 20, married for three years had in that time had four pregnancies. First child was still born, then she had two abortions, but the present pregnancy resulted in a full term child. Her father was insane. She had been in very poor health during the pregnancy and was badly fed. She was attended by a midwife, had severe post-partum haemorrhage and some delay was caused before a doctor could be at hand to detach the placenta. Her temperature rose to 100° at the seventh day after she had been dejected and out of sorts for two days. Admitted on the 9th day, she was confused and excited, laughing and crying alternately and incoherent in speech. Her temperature was 101.2°, her pulse 120, the lochia profuse and offensive. Vaginal douching kept her temperature at 100° for two days, but then it rose to 102° and 10 cc. antistreptococcic serum were given for four days, at the end of which the temperature was normal and continued so. In five weeks the excitement gave place to a mild confusion and/

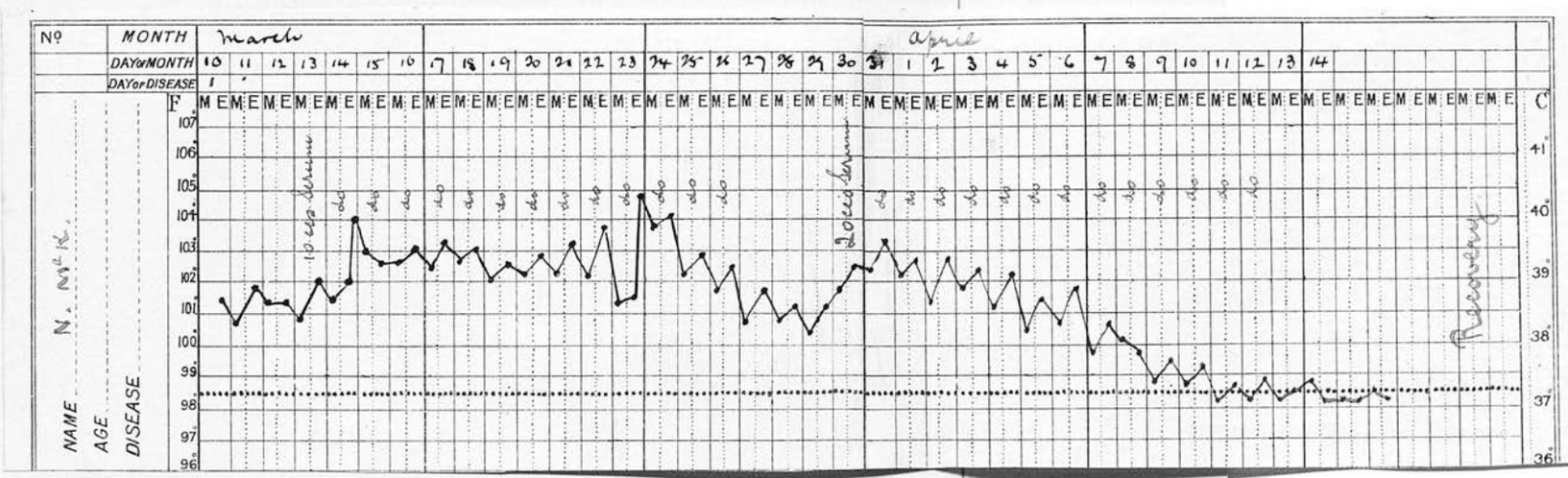
and she was recovered by the end of the 6th week.

These two cases suggest some comparisons. The first case from its course appeared to be one of puerperal septicaemia with mental complications, the second might be called a case of puerperal excitement with transient septicaemia. The first woman had a good history; her family history could be authenticated for several generations as she came of a crofter stock, and she herself proved on recovery intelligent and mentally well-balanced. Her symptoms suggested that the septic poison had at the first assault upon her brain cells upset their function, assisted probably by the mental pain undoubtedly experienced by the girl in her misfortune. Her healthy brain cells however soon righted themselves, only yielding at times at which the very high temperature indicated an excess of toxine.

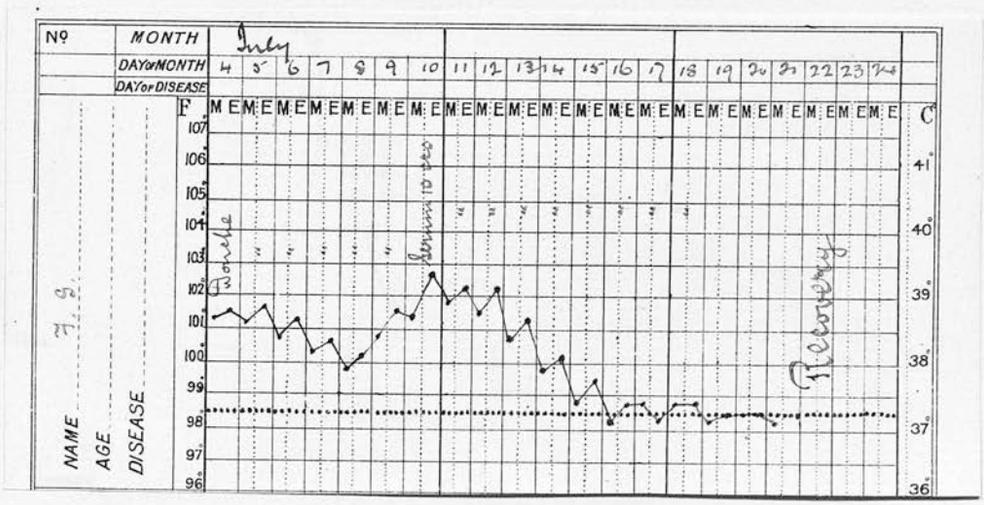
The second woman in addition to a bad heredity had an exhausting labour. In her case the excitement seemed to be due to septic poisoning but here while the temperature fell under the influence of the serum etc., the unstable brain cells had received a shock from which they only recovered in six weeks, a long time after the physical symptoms of the toxaemia had passed away. In both cases the mental excitement began on the 8th day and the mental symptoms/

Charts shewing the effect upon the temperature of the Serum treatment .

Case No. L. N. McK.



Case No. 3 F. G.



symptoms at first were almost identical.

Quinine and vaginal doucheing may claim their share in the treatment of the second case, but in view of the rising temperature after admission there is much to be said in favour of the arrest of the septicaemia being greatly aided by the serum.

CASE III. was very similar to the preceding one. The temperature on admission was 101.2° which fell to 100° under repeated doucheing. It began to rise steadily and when at 103°, serum was given in 10 cc. doses daily. In five days the temperature was normal. The patient whose mental condition was similar to that of the last case did not recover for 10 months but in this case the heredity was more direct and in addition she was anaemic and depressed for a month before the confinement.

CASE IV, has already been noted as that one in which death took place in a few days after admission with the evacuation of a quantity of pus shewing the existence of an abscess in the region of the pouch of Douglas. Serum was given in the usual dose and brought about a slight fall of temperature but it was only given for two days before the patient died.

CASE V./

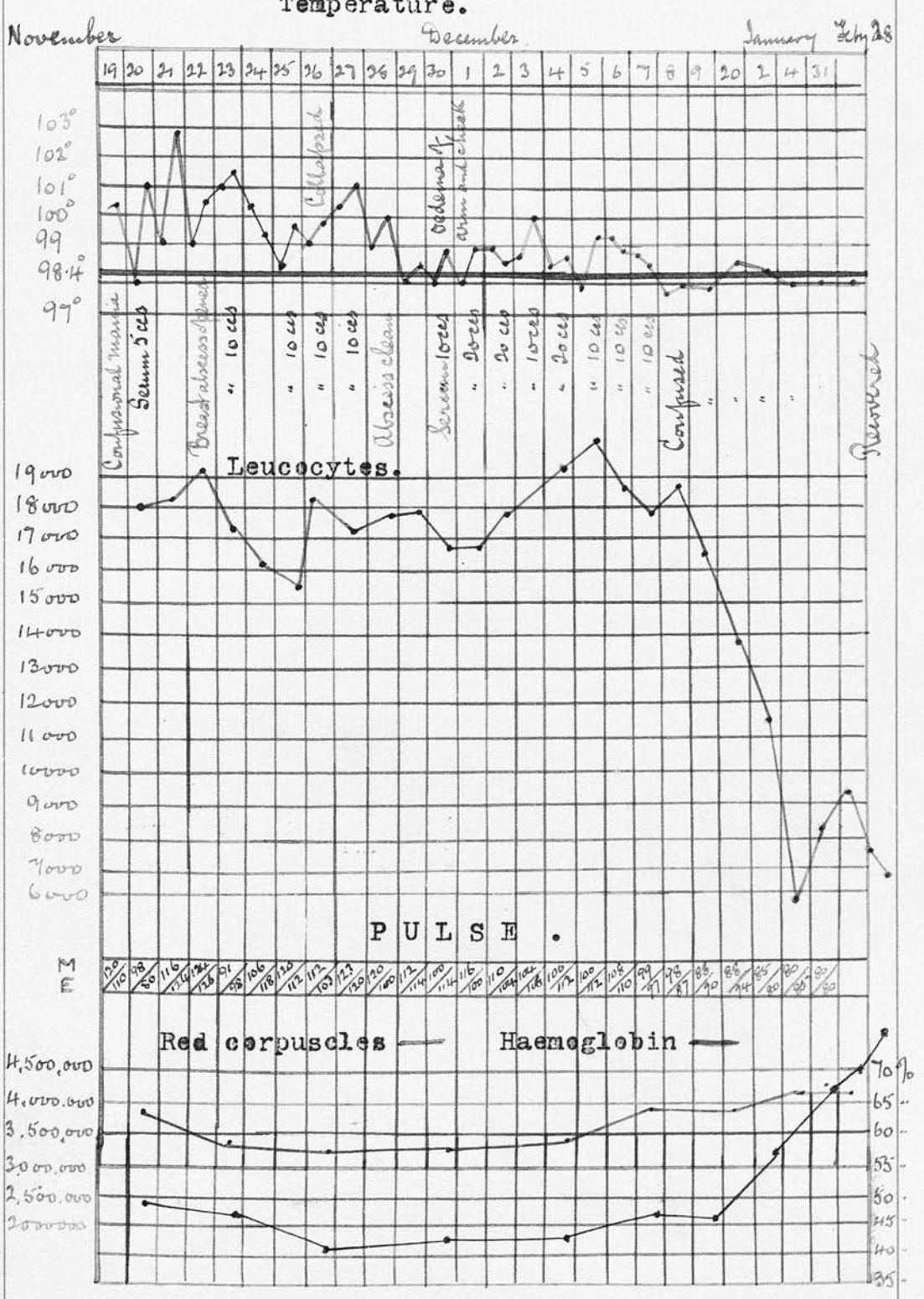
CASE V. It is often urged that it is useless to give antistreptococcic serum unless it has been proved that the streptococcus is present. In the fatal septicaemic cases where the streptococcus was found in the blood it was not in two cases discoverable in a uterine scraping, but early serum treatment might have helped these cases. In the following case, staphylococcus was found in a breast abscess and never streptococcus, but the serum was begun at once.

I.G.C. aged 20, married, had a strong history of insanity and was weak-minded slightly. Her labour was normal, conducted by a midwife. On the 15th day she became restless and said her mother was trying to kill her. On admission she was wildly excited and confused. She talked incessantly, accusing the nurses and doctors, whom she took to be relatives, of poisoning her. She repeated this over and over again in an angry tone but shewing no emotion in her face. Her tongue and lips were dry and covered with sordes, and she refused food. Her pulse was 120, of low tension, and her temperature was 101.° She continued in a delirious condition for several days, at times banging her head against the wall or bed. Her physical state was very weak. Her blood shewed red corpuscles 3,650,000,

Haemoglobin/

Haemoglobin 48 per cent and leucocytes 18,000. On the second day she had 5 cc. of serum. A swelling of the left breast was freely opened up but there was no discharge. A complete examination of the uterus revealed nothing abnormal. Some pus came from the opening in the breast on the following day and films made from it shewed staphylococci. For several days she was quieter with occasional attacks of great excitement. On the 4th day she had 10 cc. of serum. Her breast was now opened up again and some pus evacuated. On the 6th day she was very weak, too exhausted to speak but flinging her arms about and picking at the bed clothes. The breast was improving rapidly. On 6th 7th and 8th days she had 10 cc. serum. The temperature still varied from 99° to 101°, her pulse was 120 and respirations 28. On the 8th day her condition was very critical. She had repeated saline injections both per rectum and hypodermically. On the 9th day the temperature began to fall but she was sinking and had repeated doses of whisky. Her breast wound was perfectly clear now. The leucocytes remained about 17,000 - 18,000. On the 12th day she had oedema of the right arm and hand and her lips and cheeks were swollen a little. There was no albumin/

J. G. C. Case of confusional excitement with grave physical symptoms , treated to recovery with Anti-streptococcic serum .



albumin in the urine. Her temperature was now normal, but she had another dose of serum. Next day she was weaker but 20 cc.' were given , her temperature afterwards rising to 99°. On the 16th day she began to improve and became noisy again. Her temperature continued rising occasionally to 99° till after the 19th day when she had her last injection of serum. For a month afterwards she was very confused but then began to take her food herself and was discharged recovered four months after admission.

CASE VI. K.F.M°L. age 36, was admitted in a state of great excitement, shouting and screaming under the influence of terrifying hallucinations. Her pulse was 112 , her temperature 98°. There was no evidence of sepsis. She was given 5 cc.' of serum on admission. Next morning her temperature was 100° and she was given another 5 cc.' . Her leucocytosis at this time was only 8,750, but she was much exhausted. The following day the temperature rose from normal to 99.4° after 5 cc.' of serum and her leucocytosis was 9,800. She was very quiet after this for several days but gradually passed into a condition of slight restlessness with distressing delusions in which she remains after two years. The serum was discontinued at the 6th day/

day. At the present time her blood shews haemoglobin 68 per cent, red cells 4,375,000 and leucocytes 11,000. She is very degenerate looking and there is a strong history of insanity in the family.

CASE VII. was that of a woman who was admitted four weeks after the confinement. At the 2nd week she had been depressed and then became maniacal. On admission she was deliricus and completely exhausted. Her temperature which had been elevated for some time was beginning to fall and her case was practically hopeless. Her blood shewed red cells 2,900,000,Haemoglobin 5 per cent and leucocytes 6,520. Ten cc. of serum were injected every day. The fall of temperature seen at the termination of other fatal cases had begun and the woman died on the eighth day after admission. The only trace of sepsis that could be found was that a few pus cells were found on microscopically examining the water after an intra-uterine douche.

CASES VIII and IX. have already been described under the pathology. In the first of these cases M.M.H., the serum was not begun till the disease was well advanced and unfortunately it was not given in large doses. I was doubtful at that time of the efficacy/

efficacy of the serum and was largely influenced by the constant rise in temperature that occurred after each administration. I should not now hesitate in view of recent writings and in face of the grave nature of these cases to give a very large dose should the opportunity occur. The temperature in this case was taken every hour for 12 hours after each injection of serum and a slight fall was always followed by a pronounced rise in a few hours.

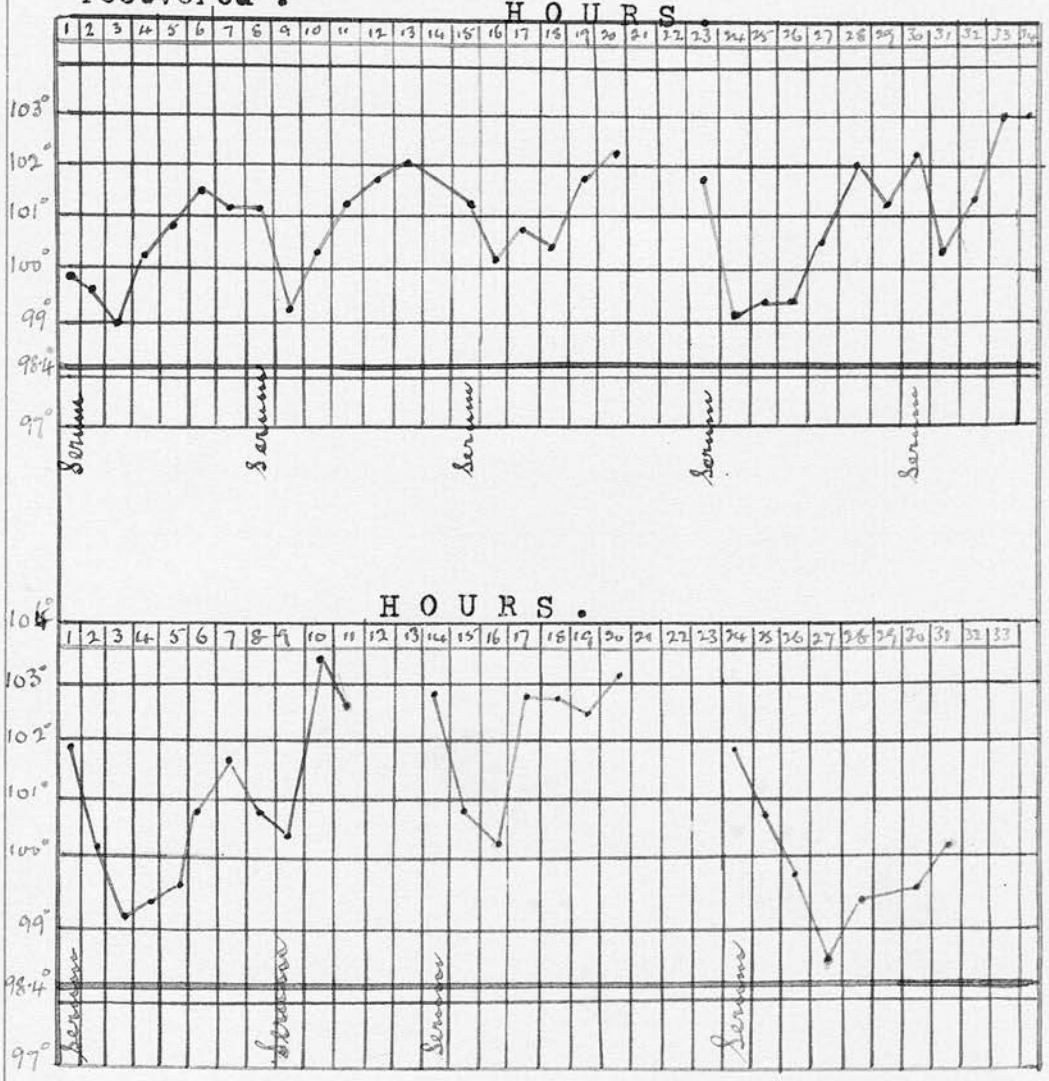
In Case I however, the rise also occurred and in Case VII no rise, and I believe that in these cases its occurrence was a sign of the efficacy of the reaction. The temperature also rose slightly after the serum in the other cases that recovered.

Case X. was another prolonged delirious case in which streptococci were found in the blood. Serum was given in 20 cc. doses for 10 days and the temperature became normal and remained so for ten days. During this time however the patient was getting weaker and some complication seemed to set in, the nature of which could not be diagnosed. Her temperature remained down, but she got more anaemic and seemed actually to shrivel up. Her temperature began to rise when she shewed signs of improvement. Serum was resumed but the temperature remained at 100° for three days, then began a fall similar to the other septicaemias /

other septicaemias and she died. Here again the serum was not begun till the woman had been ill for many days and her leucocytes on admission were only 7,000. This low leucocytosis along with a temperature was a grave sign in every case and it may be pointed out that in Case V. where the serum was successful in spite of great exhaustion, the leucocytosis was up to 17,000.

The fall of temperature in CasesII and III may not have been due to the serum treatment but here it was given, as in No.V., at the commencement of the disease. The earlier it can be given the better, and I believe that in cases where the temperature goes up in spite of doucheing and local treatment the use of serum may prevent serious results. In the other cases I believe that very large doses would have done good and, begun as early as possible, might have saved some of the cases. Looking to the condition of the leucocytosis in those grave cases indicating a great want of immune power in the blood, I should apply Bruce's statement that "antistreptococcic serum is always worthy of a trial in acute mania with confusion," especially to the acute confusional conditions of the puerperium with a raised temperature.

One - hourly charts to shew the effect on the temperature in two cases treated with Serum . The rise of temperature which followed the injection prompted in some cases the discontinuing of the Serum. The first case proved fatal , the second recovered .



CONCLUSIONS.

I. That any variety of mental disease may have its starting point in the Puerperium.

II. That the common varieties directly due to puerperal causes have a common symptom viz. confusion.

III. That this confusion may be combined with excitement in the form of

1. Acute Mania with confusion and

2. Conditions of Acute delirium which latter are severe forms of the confusional excitement, and that these two constitute by far the most cases occurring in the first fortnight.

IV. That symptoms of Katatonia may occur in any of the varieties, and together with confusion may give rise to conditions of stupor.

V. That confusion with Melancholia is the mental state in most of those cases that begin late in the Puerperium.

VI. That the acute confusional excitements may be due to sepsis or collapse and that the prolonged cases of delirium usually known as Acute Delirious Mania/

Mania are on the mental side no more acute than some of the rapidly recovering cases, and that the gravity of the condition is due to physical conditions.

VII. That many of the prolonged delirious conditions are streptococcal in origin and that the infection is probably in many cases a tubal one.

VIII. That the neurotic diathesis is present in nearly every case and is probably in inverse ratio to the amount of the sum of the other predisposing and exciting causes.

IX. That mild sepsis may bring about Insanity in combination with a severe neurotic tendency.

X. That apart from extraneous complications viz. Consumption: death from suicidal wounds etc: those cases that die in spite of treatment are almost all septicaemic in origin.

XI. That the causes of the milder confusional states and melancholic states are probably exhaustion, mental or physical, and that intestinal and metabolic toxaemias may play a contributory part in their causation.

XII./

XII. That examination of the blood points to a toxic element in excited cases apart from sepsis, and that the cases due to collapse and exhaustion are probably, as the result of diminished power of immunity in the blood and diminished nervous resistance, in part the result of auto-intoxication.

XIII. That the mental symptoms even in melancholic cases are suggestive of a toxaemia.

XIV. That the prognosis in Puerperal Insanity is good. That complete mental recovery takes place in the majority of cases, and even the patient who is most unstable mentally may recover most quickly if treatment is begun at once. That the prognosis is unfavourable in proportion to the duration of action of the predisposing causes and to the severity of the physical exciting causes.

XV. That in the treatment of the cases of excitement and delirium antistreptococcic serum may be of value. That it must be given immediately and in sufficient doses in those cases where the temperature does not fall under other treatment, and that even after the temperature has been elevated for some time, very large doses should be tried, guided by the leucocytosis.